University of Idaho
College of Natural Resources

Analysis of Increased Federal Harvesting using Good Neighbor Authority in the Inland Northwest

Cassandra Goodmansen, Greg Latta, Dennis Becker, Raju Pokharel, Greg Alward, and Chris Gambino

Policy Analysis Group. University of Idaho. College of Natural Resources, 875 Perimeter Drive MS 1134, Moscow, ID 83844-1134

Presented at the Western Forest Economists meeting June 3, 2019 meeting

CNR Policy Analysis Group

Dennis Becker
Dean

Greg Latta
Director

Phil Cook
Principal Researcher

Greg Alward
Senior Scientist

Raju Pokharel
Postdoctoral Fellow

Chelsea McIver
Doctoral

Katie Wollstein
Doctoral

Chad Washington
Masters

Michelle Benedum
Masters

Sarah Parkinson
Masters

Cassandra Goodmansen
Masters

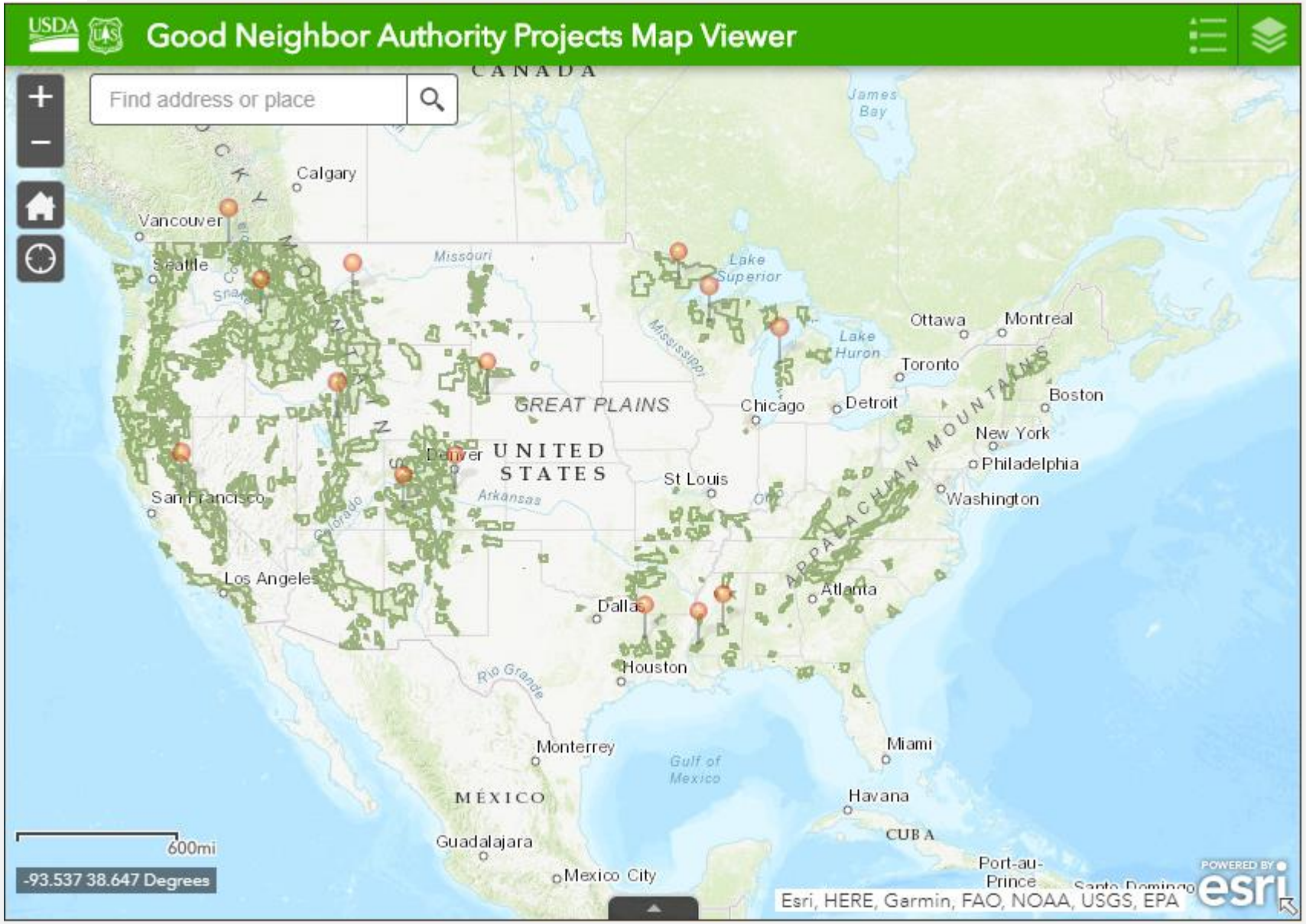
GOOD NEIGHBOR AUTHORITY ANALYSIS

- Background
- Scenarios
  - Area, ownerships, and harvest increases we are focusing on
- Modeling Approach
  - the Land Use and Resource Analysis (LURA) model
- Results
  - Harvest changes
  - Additional log hauling required
  - Economic contributions
- Future Direction – other results/issues

GNA BACKGROUND

- Intended to be **additive**, meaning they augment existing management activities on federal lands.
  - Increase pace and scale of forest and watershed **restoration** activities on federal forests.
  - Provide additional fiber to regional markets.
- **Plans are to be a self-sustaining program in the next 3-5 years.**
  - IDL's GNA plan to use program income from timber sales to generate income for continued projects.

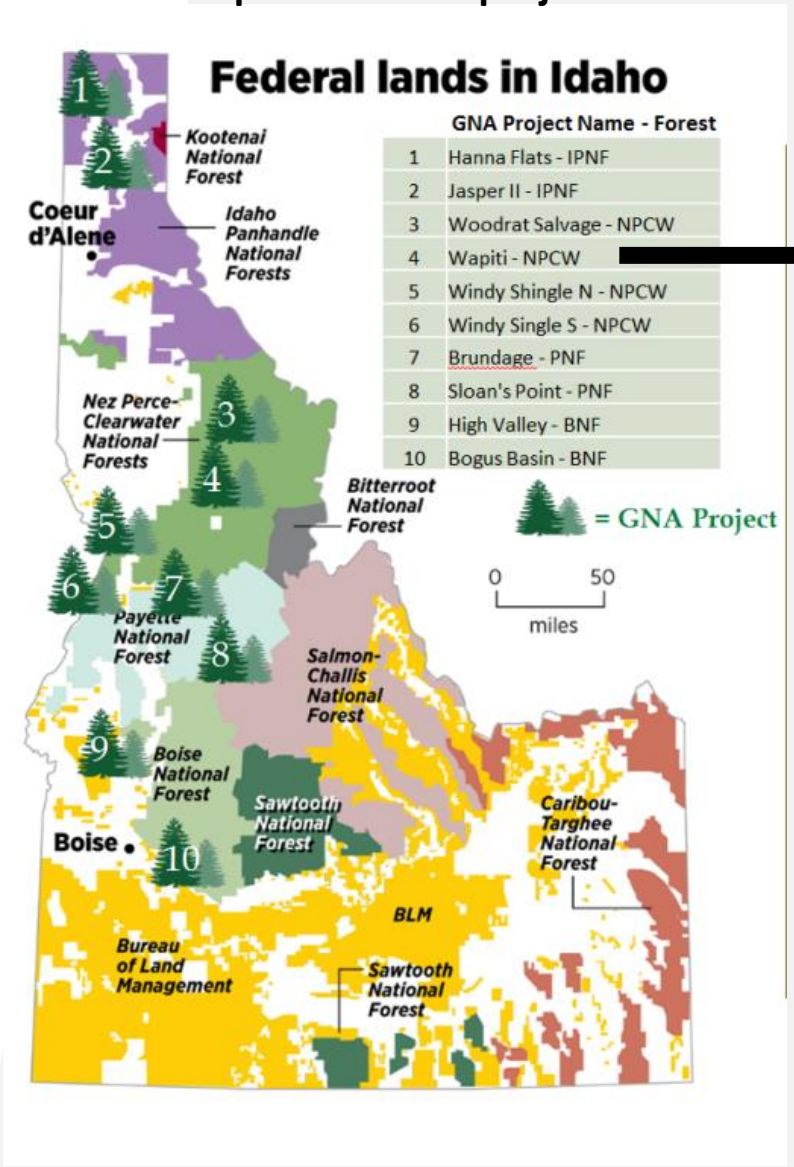
GNA– CURRENT PROJECTS



https://www.fs.fed.us/managing-land/farm-bill/gna

GNA - IN IDAHO

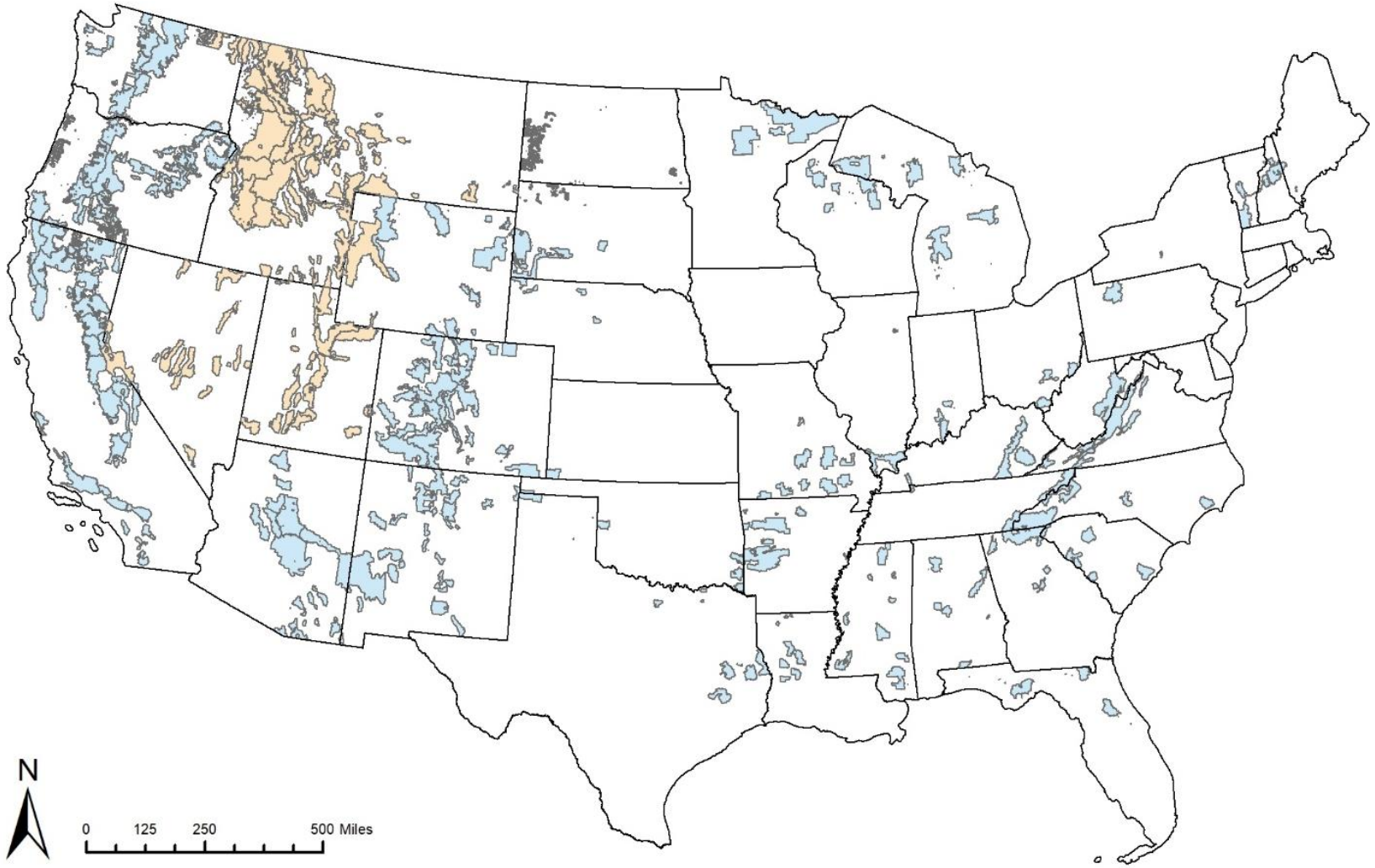
Current and planned GNA projects in Idaho



Wapiti GNA project – forest health and fuel reduction

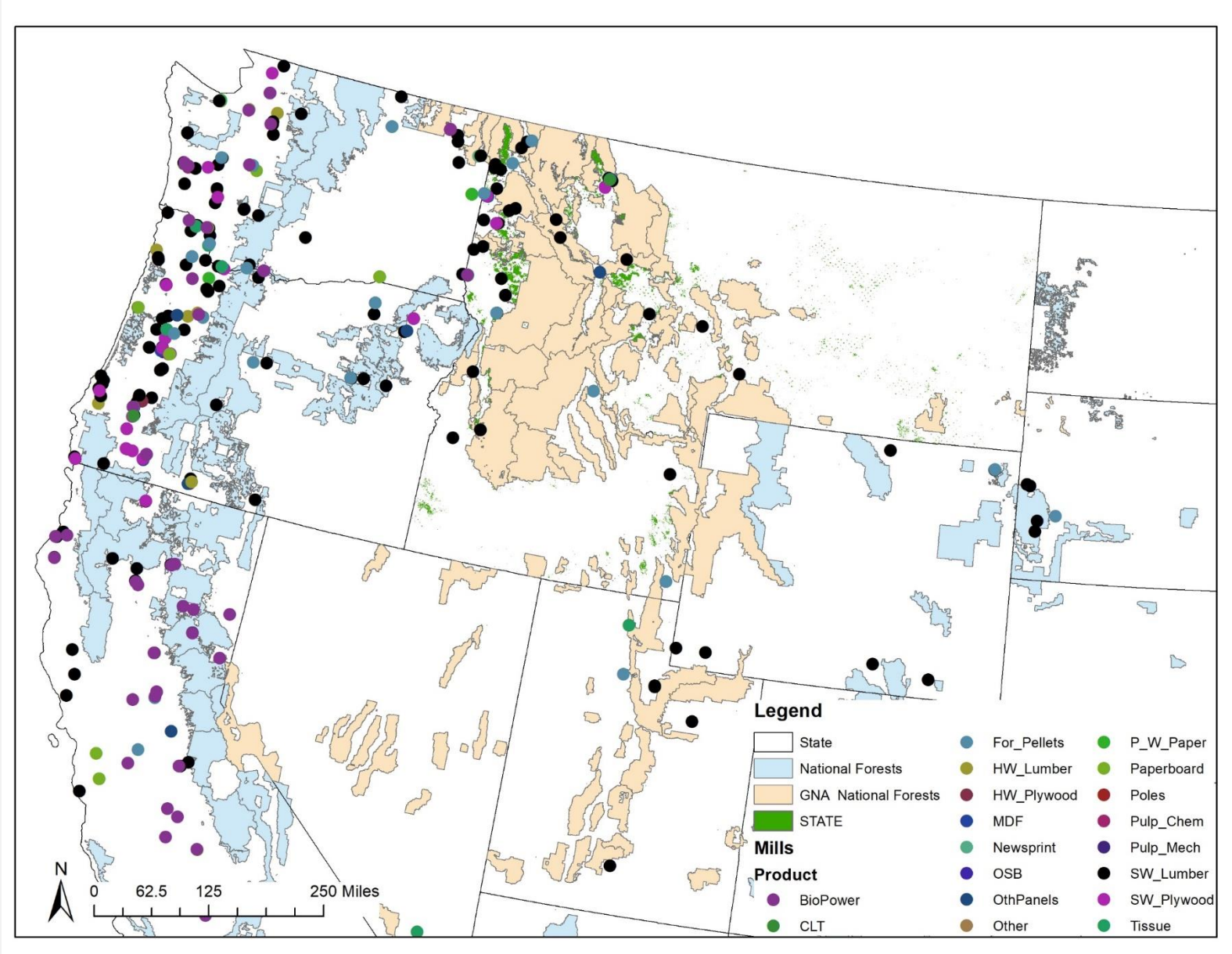
GNA – US NATIONAL FOREST SYSTEM

- Step 1: Define analysis extent
  - There are 235 million acres in the US National Forest System
  - Our analysis area focuses on 23 forests covering 62 million acres



GNA– ANALYSIS EXTENT

- Step 1: Define analysis extent
  - There are 235 million acres in the US National Forest System
  - Our analysis area focuses on 23 forests covering 62 million acres
  - We will also include projected harvest levels for ID and MT state lands
  - And account for the forest products industry and markets



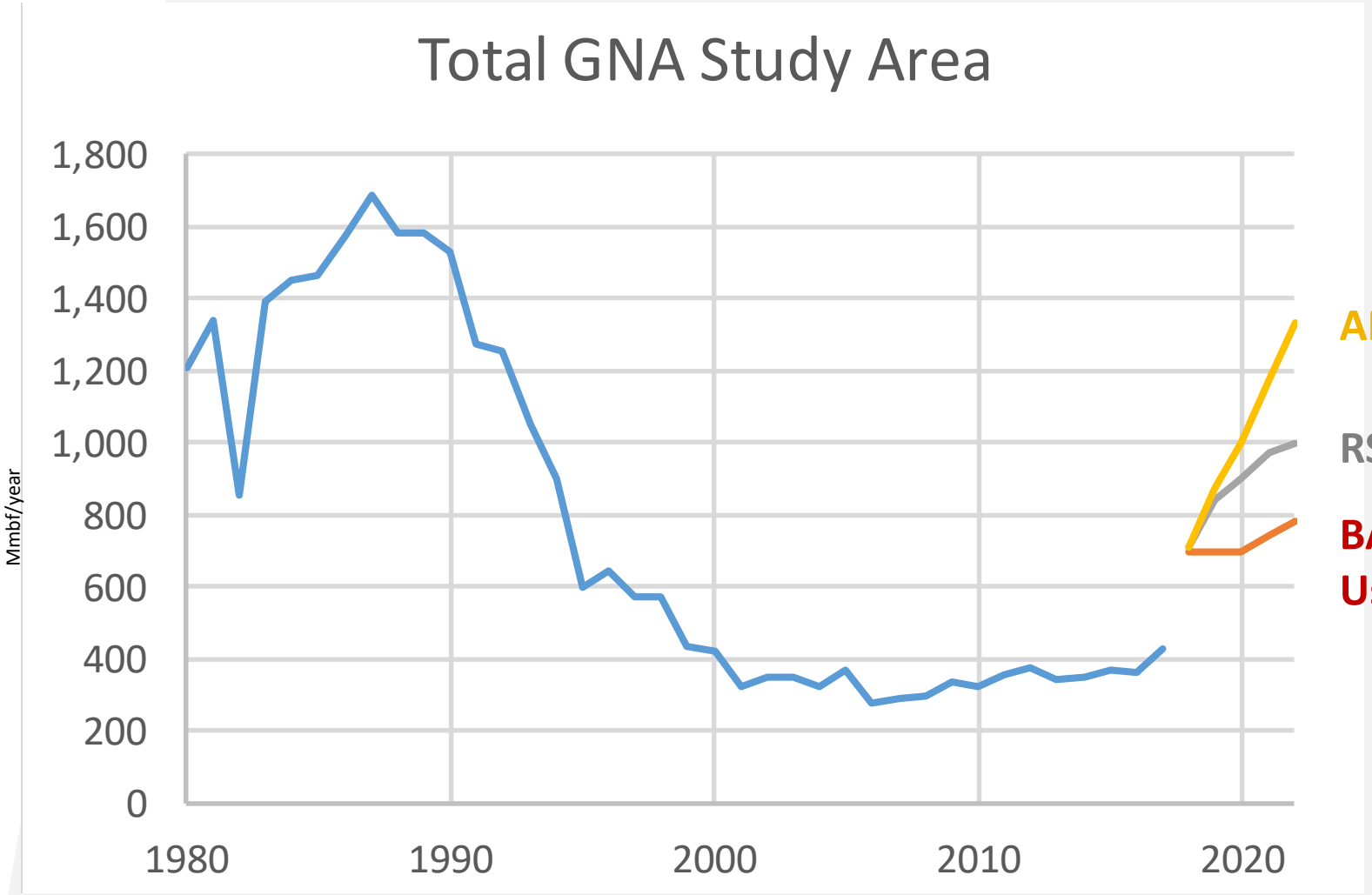
GNA – HARVEST TARGET SCENARIOS

- Step 2: Determine potential levels of future harvest for scenarios
  - Business as Usual (**BAU**)
  - **Reasonable** expectation of increase
  - **Ambitious** expectation of increase

	POD	Level 1 (BAU)					Level 2 (Reasonable)					Level 3 (Ambitious)				
		FY 2018 (MMBF)	FY 2019 (MMBF)	FY 2020 (MMBF)	FY 2021 (MMBF)	FY 2022 (MMBF)	FY 2018 (MMBF)	FY 2019 (MMBF)	FY 2020 (MMBF)	FY 2021 (MMBF)	FY 2022 (MMBF)	FY 2018 (MMBF)	FY 2019 (MMBF)	FY 2020 (MMBF)	FY 2021 (MMBF)	FY 2022 (MMBF)
R4-ID/WY	Boise	26.7	25.8	27.7	21.4	32.5	32.5	35.8	39.3	43.3	47.6	32.5	39.0	46.8	56.2	67.4
	Bridger-Teton	10.2	10.5	11.3	13.6	12.0	12.0	13.2	14.5	16.0	17.6	12.0	14.4	17.3	20.7	24.9
	Payette	24.0	25.3	23.6	21.8	28.1	28.1	30.9	34.0	37.4	41.1	28.1	33.7	40.5	48.6	58.3
	Salmon-Challis	10.5	11.5	11.5	5.7	10.8	10.8	11.9	13.1	14.4	15.8	10.8	13.0	15.6	18.7	22.4
	Sawtooth	6.2	5.5	6.8	6.5	6.3	6.3	6.9	7.6	8.4	9.2	6.3	7.6	9.1	10.9	13.1
	Caribou-Targhee	8.2	8.1	9.7	10.6	9.3	9.3	10.2	11.3	12.4	13.6	9.3	11.2	13.4	16.1	19.3
	POD Target **	**86**	**87**	**91**	**80**	**99**	**99**	**109**	**120**	**132**	**145**	**99**	**119**	**143**	**171**	**205**
R4-UT	Ashley	6.1	6.1	4.7	6.6	6.1	6.1	6.7	7.4	8.1	8.9	6.1	7.3	8.8	10.5	12.6
	Dixie	17.0	17.3	15.7	14.9	17.0	17.0	18.7	20.6	22.6	24.9	17.0	20.4	24.5	29.4	35.3
	Fishlake	5.2	2.9	5.4	4.9	5.2	5.2	5.7	6.3	6.9	7.6	5.2	6.2	7.5	9.0	10.8
	Manti-LaSal	6.2	58.0	55.2	55.2	6.2	6.2	58.0	55.2	55.2	6.8	6.2	58.0	55.2	55.2	6.8
	Uinta Wasatch-Cache	12.4	6.5	7.2	6.0	12.4	12.4	13.6	15.0	16.5	18.2	12.4	14.9	17.9	21.4	25.7
	POD Target **	**47**	**91**	**88**	**88**	**47**	**47**	**103**	**104**	**109**	**66**	**47**	**107**	**114**	**126**	**91**
R4-NV	Humboldt-Toiyabe	3.5	3.5	3.5	3.5	3.5	3.5	3.9	4.2	4.7	5.1	3.5	4.2	5.0	6.0	7.3
	POD Target **	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**4**	**4**	**5**	**6**	**7**
R1-ID	Idaho Panhandle	58.0	59.0	61.0	87.0	87.0	58.0	75.0	87.0	91.2	95.8	58.0	69.6	83.5	100.2	120.3
	Nez Perce-Clearwater	84.0	69.0	78.0	108.0	118.0	84.0	94.0	108.0	113.4	119.1	84.0	100.8	121.0	145.2	174.2
	POD Target **	**142**	**128**	**139**	**195**	**205**	**142**	**169**	**195**	**205**	**215**	**142**	**170**	**204**	**245**	**294**
R1-MT east	Helena-Lewis & Clark	18.0	32.4	31.1	31.1	31.1	18.0	32.4	35.6	39.2	43.1	18.0	32.4	38.9	46.7	56.0
	Beverhead-Dearlodge	29.2	52.6	50.5	50.5	50.5	29.2	52.6	57.9	63.6	70.0	29.2	52.6	63.1	75.7	90.9
	Custer-Gallatin	22.2	40.0	38.4	38.4	38.4	22.2	40.0	44.0	48.4	53.2	22.2	40.0	48.0	57.6	69.1
	POD Target **	**69**	**125**	**120**	**120**	**120**	**69**	**125**	**138**	**151**	**166**	**69**	**125**	**150**	**180**	**216**
R1-MT West	Kootenai	89.0	61.4	62.9	65.1	89	89.0	97.9	107.7	118.5	130.3	89.0	106.8	128.2	153.8	184.6
	Lolo	71.3	35.9	43.3	35.2	71.3	71.3	78.4	86.3	94.9	104.4	71.3	85.6	102.7	123.2	147.8
	Bitterroot	13.9	13.5	13.4	12.8	13.9	13.9	15.3	16.8	18.5	20.4	13.9	16.7	20.0	24.0	28.8
	Flathead	22.4	39.4	35.0	36.0	22.4	22.4	24.6	27.1	29.8	32.8	22.4	26.9	32.3	38.7	46.4
	POD Target **	**197**	**150**	**155**	**149**	**197**	**197**	**216**	**238**	**262**	**288**	**197**	**236**	**283**	**340**	**408**
R6-WA	Kaniksu															
	Collville	152.2	112.6	98.0	105.0	110.0	152.2	112.6	98.0	105.0	110.0	152.2	112.6	98.0	105.0	110.0
	POD Target **	**152**	**113**	**98**	**105**	**110**	**152**	**113**	**98**	**105**	**110**	**152**	**113**	**98**	**105**	**110**
State	Idaho Dept Lands	250.0	250.0	250.0	250.0	250.0	250.0	260.0	270.0	275.0	275.0	250.0	255.0	270.0	285.0	300.0
	MT DNRC	56.9	56.9	56.9	56.9	56.9	56.9	59.7	62.7	65.9	69.2	56.9	62.6	68.8	75.7	83.3
	GRAND TOTAL	**1,003**	**1,004**	**1,001**	**1,047**	**1,088**	**1,017**	**1,158**	**1,230**	**1,309**	**1,340**	**1,017**	**1,191**	**1,336**	**1,533**	**1,715**

GNA – Harvest target scenarios

SCENARIOS PART 2

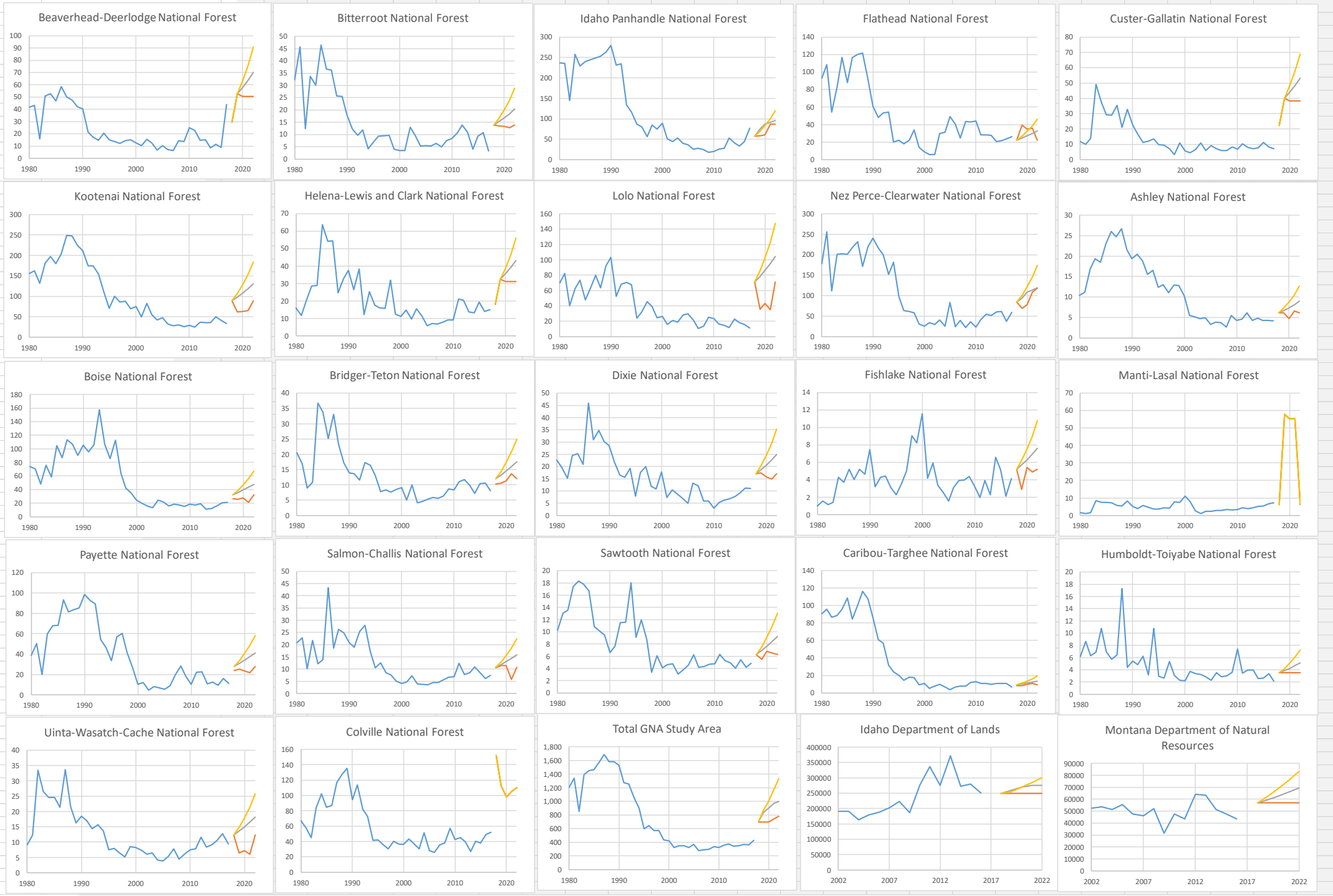


AMB – Ambitious Increase

RSN – Reasonable Increase

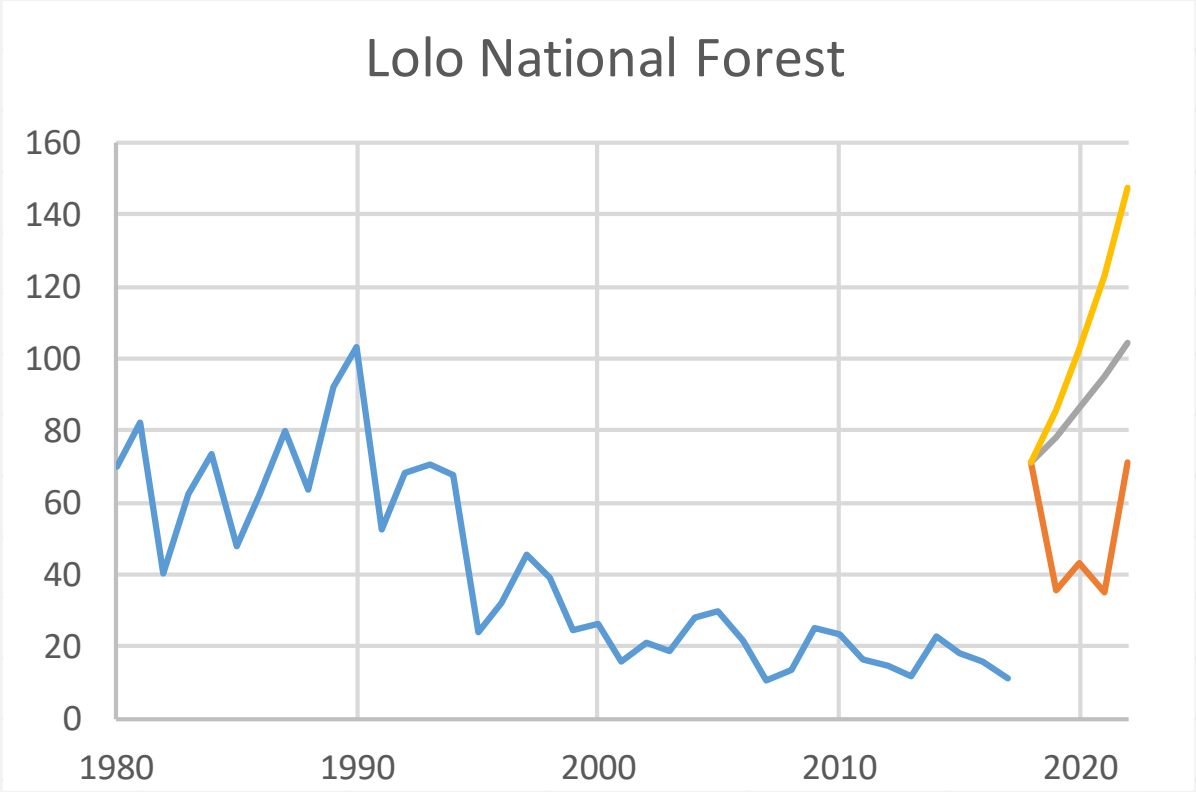
BAU – Business as Usual

SCENARIOS PART 2



GNA – Harvest target scenarios

SCENARIOS PART 2

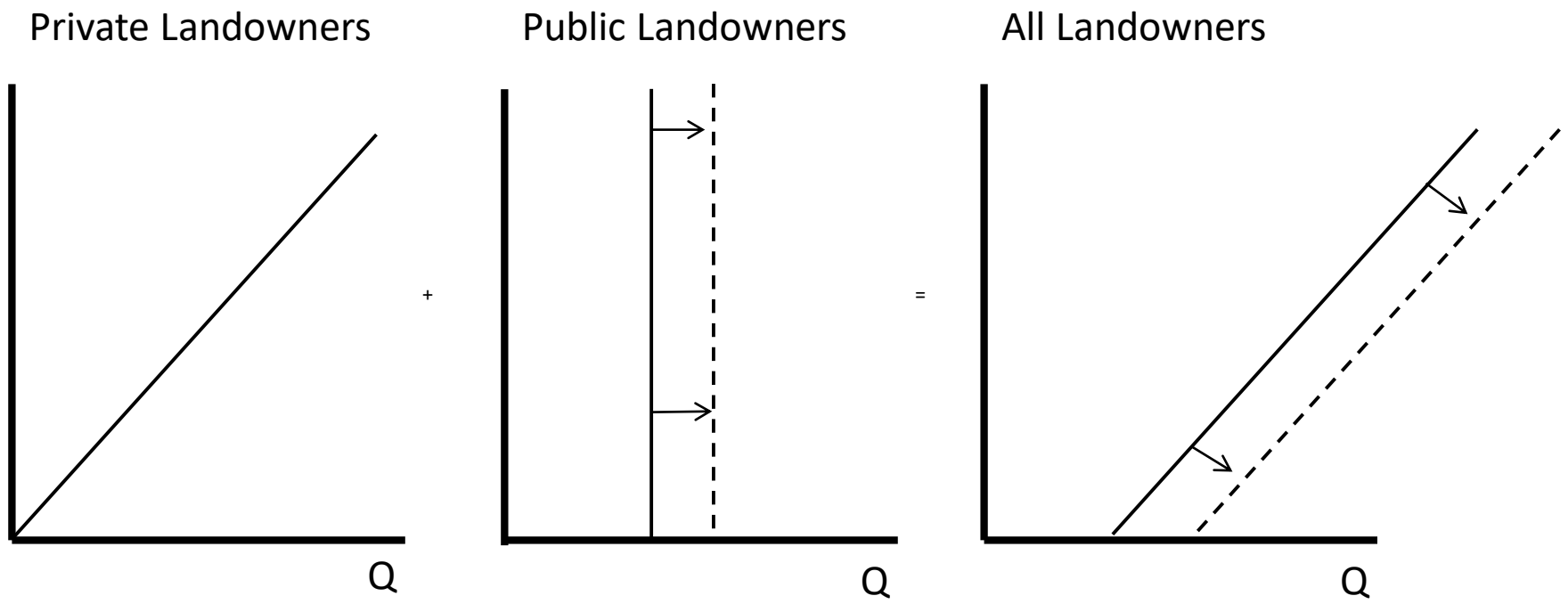


BAU – Business as Usual **RSN – Reasonable Increase**

AMB – Ambitious Increase

Economics 101

Simple Market Example

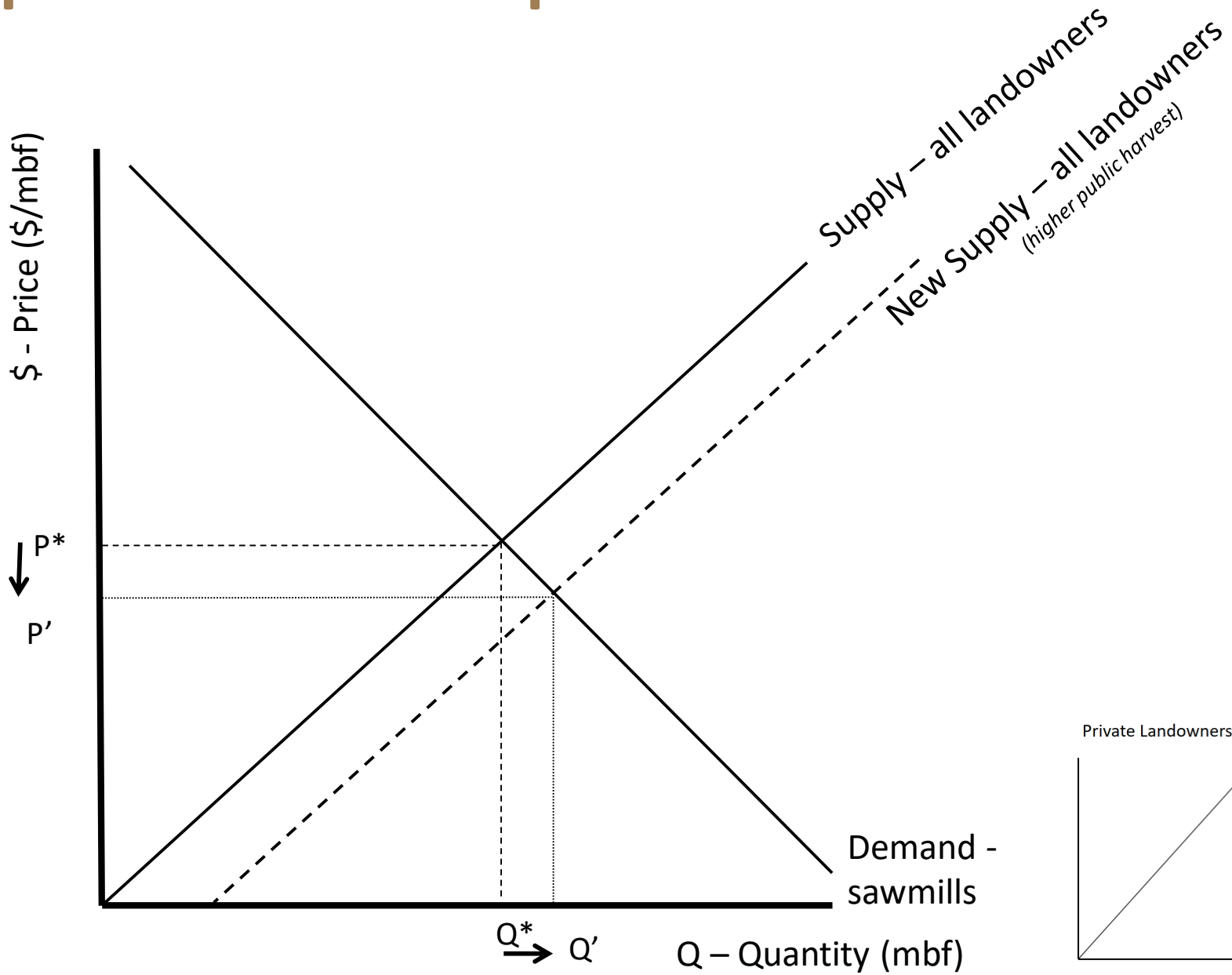


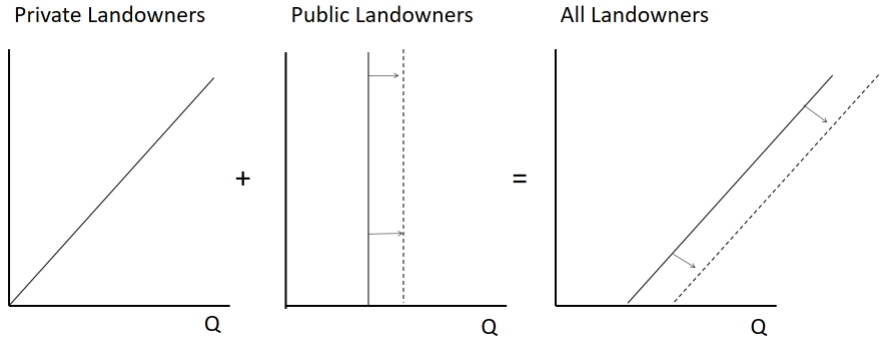
Consider a policy to increase harvest on public lands

What is the potential impact of this policy?

Simple Market Example - Part 2

University of Idaho
College of Natural Resources

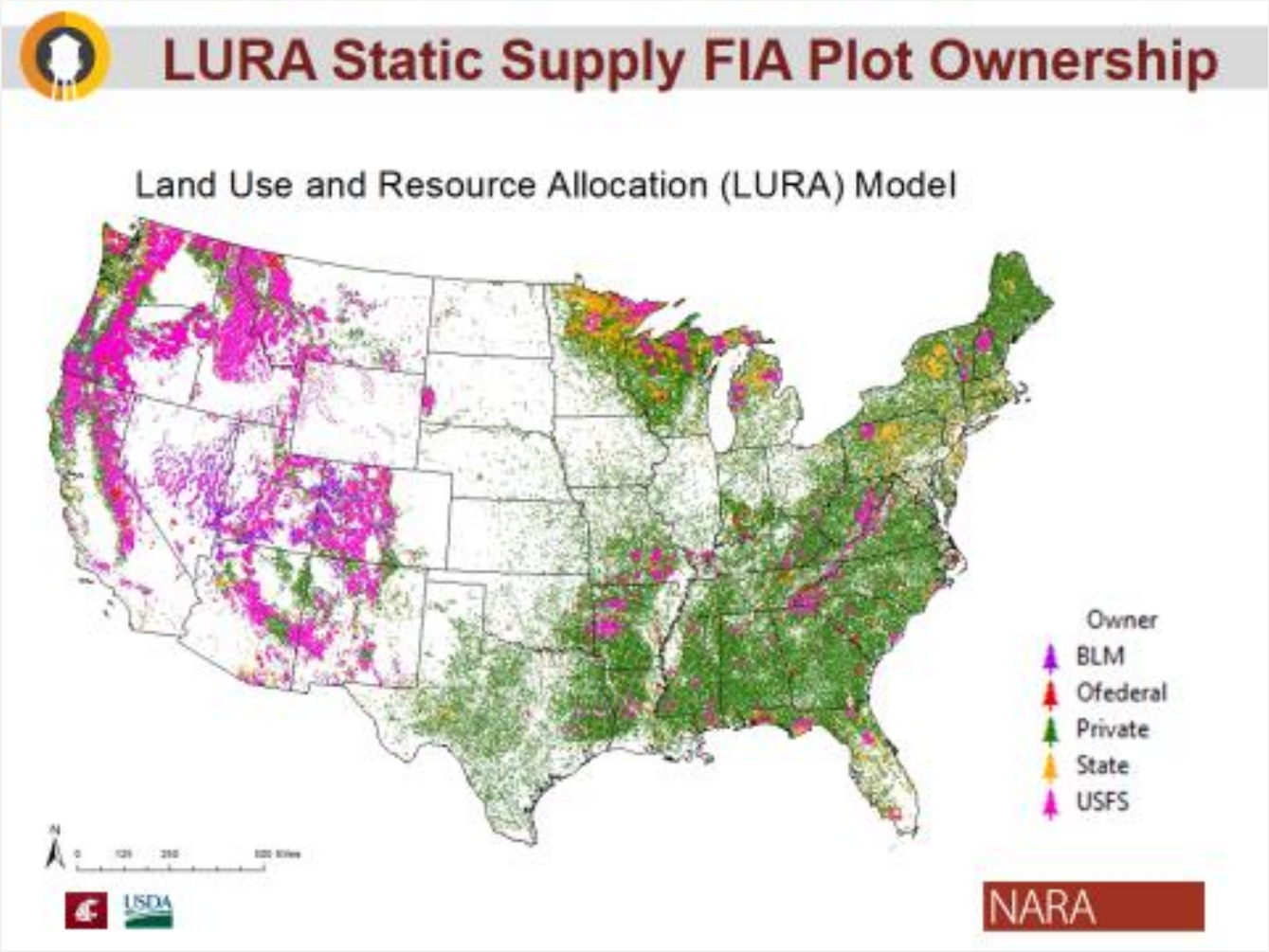




MODELING GNA FOREST MARKET EFFECTS

Step 3: Determine methodology for simulation effects of GNA harvest increase scenarios

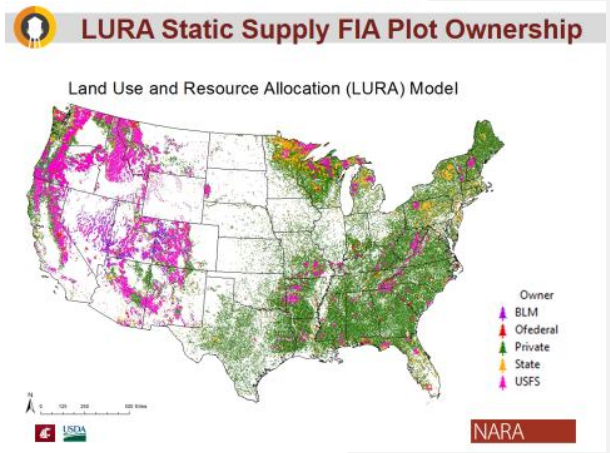
1. Which has a forest land base representation

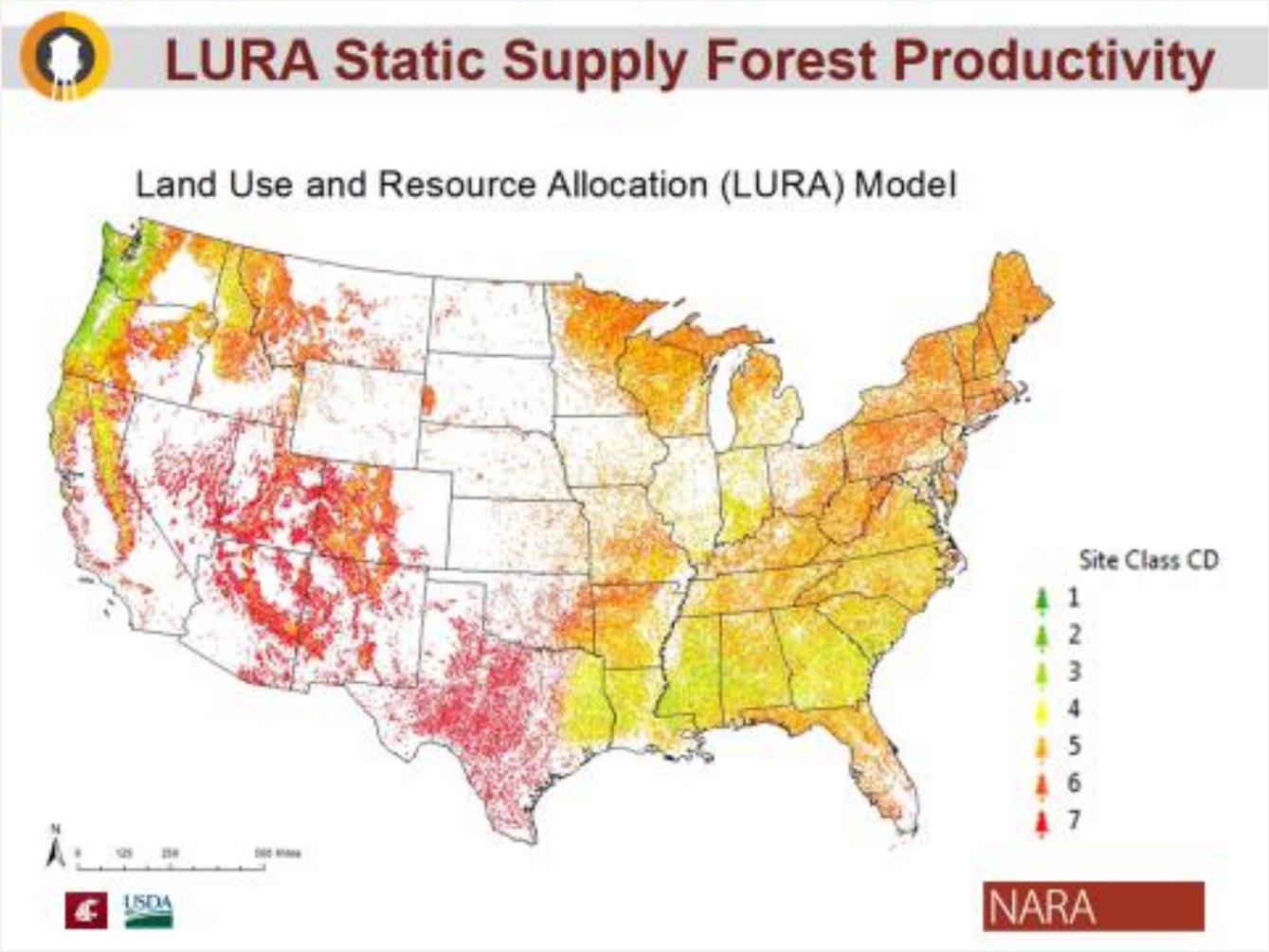


MODELING GNA FOREST MARKET EFFECTS

Step 3: Determine methodology for simulation effects of GNA harvest increase scenarios

1. Which has a forest land base representation



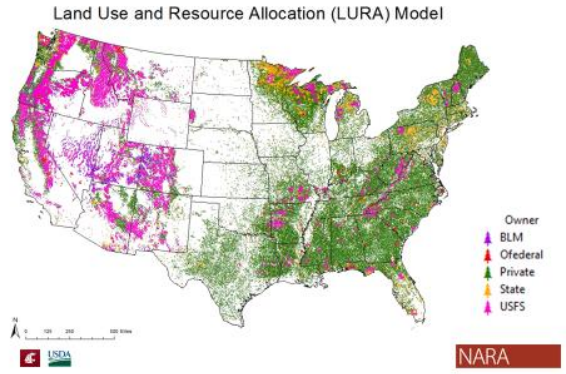


MODELING GNA FOREST MARKET EFFECTS

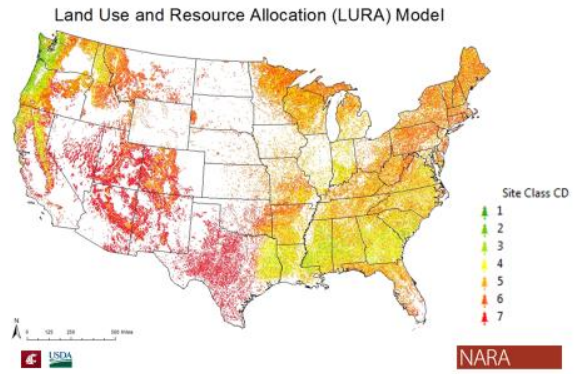
Step 3: Determine methodology for simulation effects of GNA harvest increase scenarios

1. Which has a forest land base representation
2. And a forest products market representation

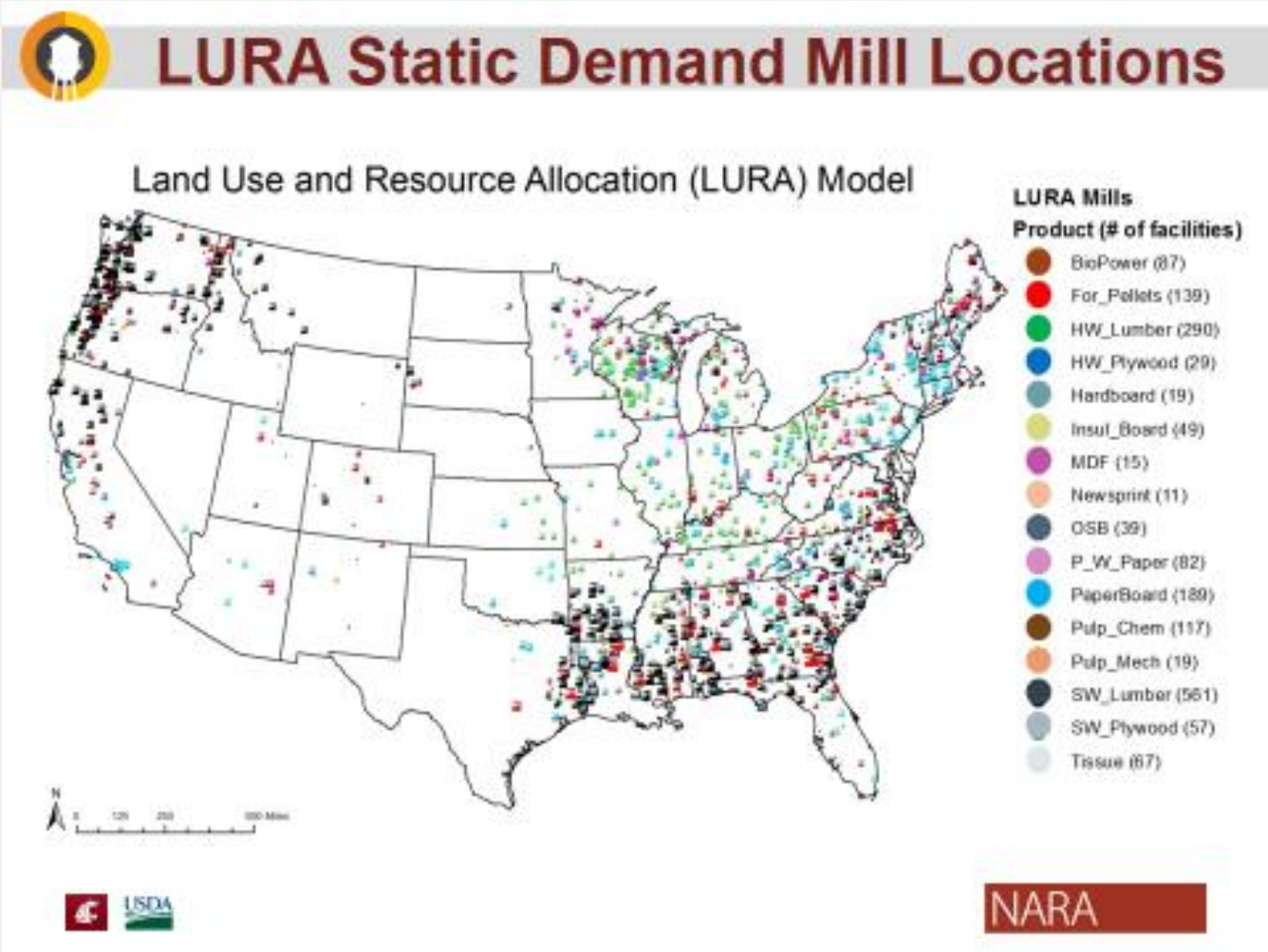
LURA Static Supply FIA Plot Ownership



LURA Static Supply Forest Productivity



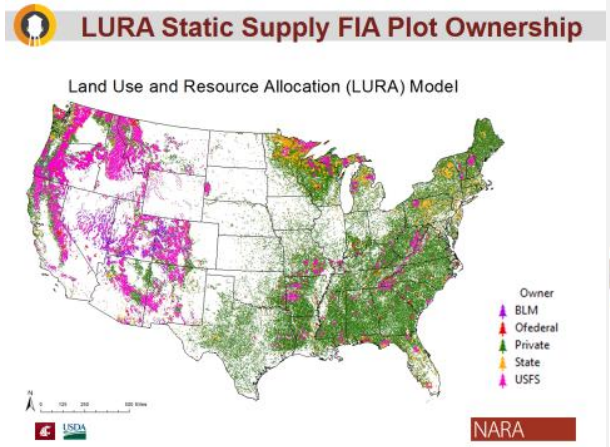
LURA Static Demand Mill Locations

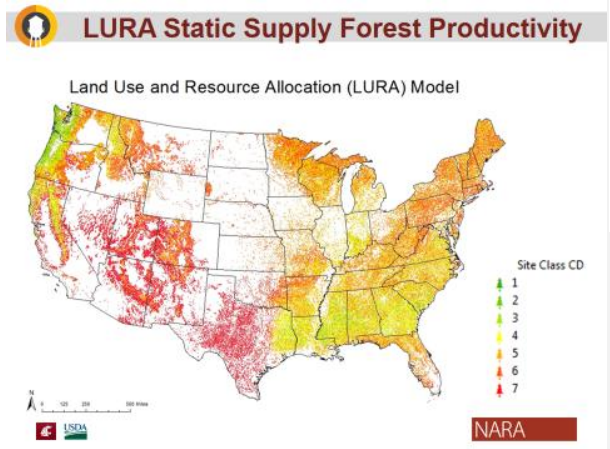


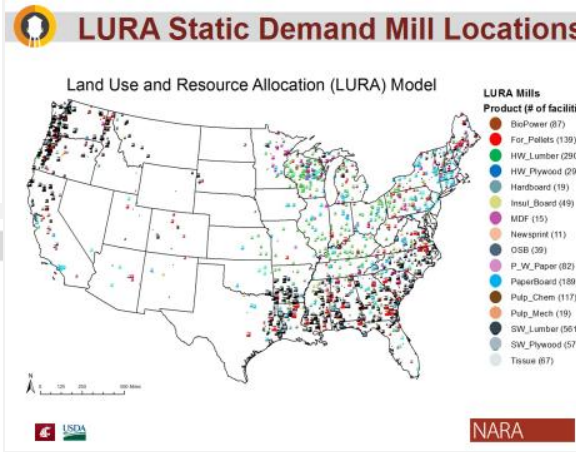
MODELING GNA FOREST MARKET EFFECTS

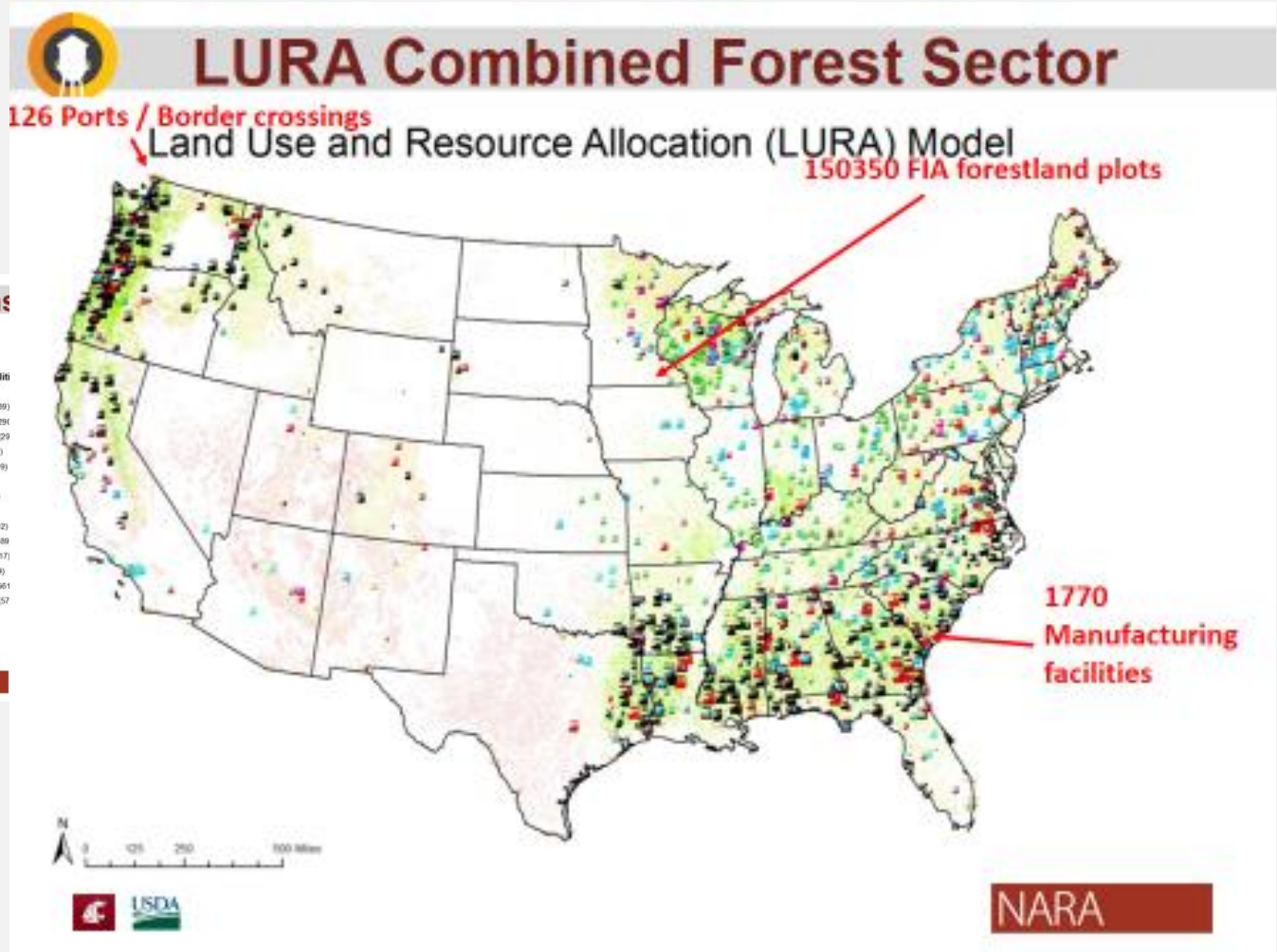
Step 3: Determine methodology for simulation effects of GNA harvest increase scenarios

1. Which has a forest land base representation
2. And a forest products market representation



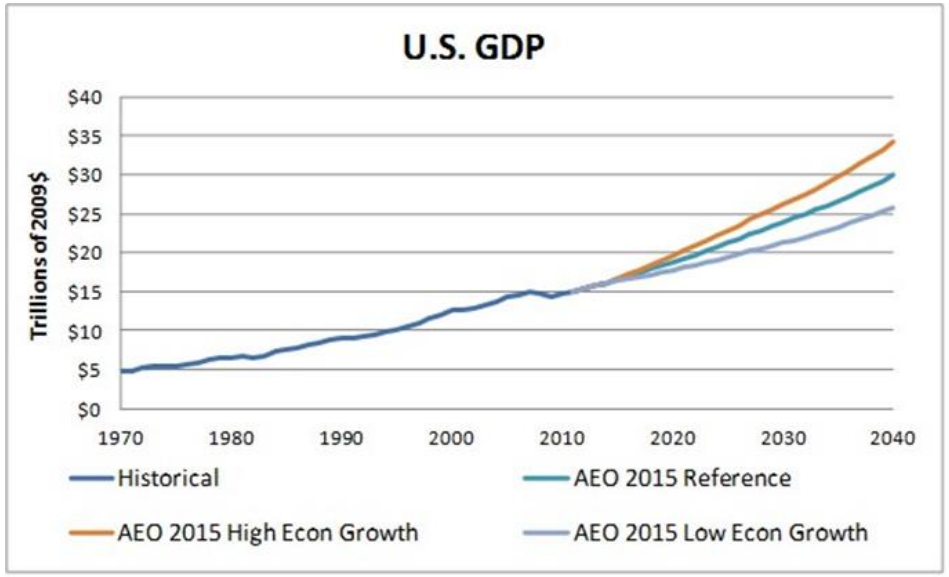


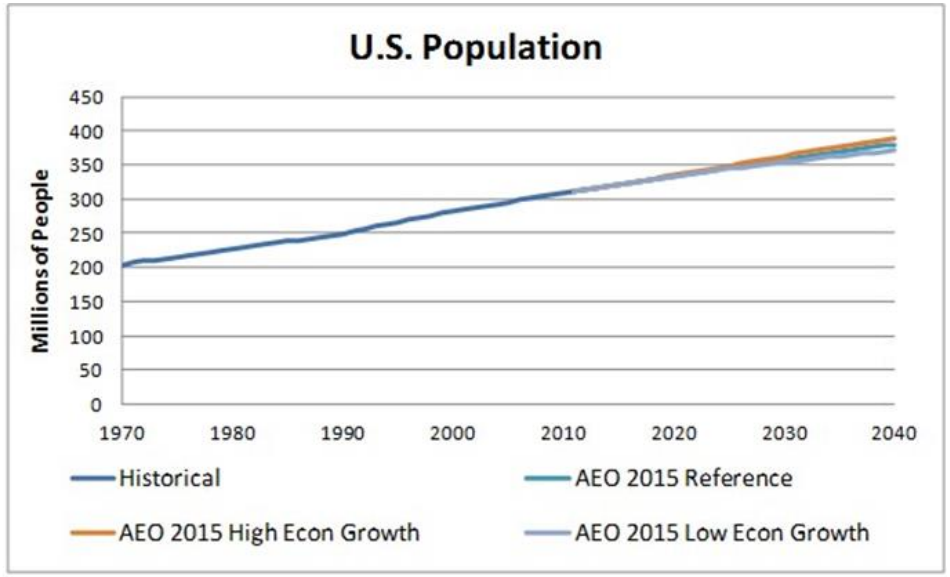


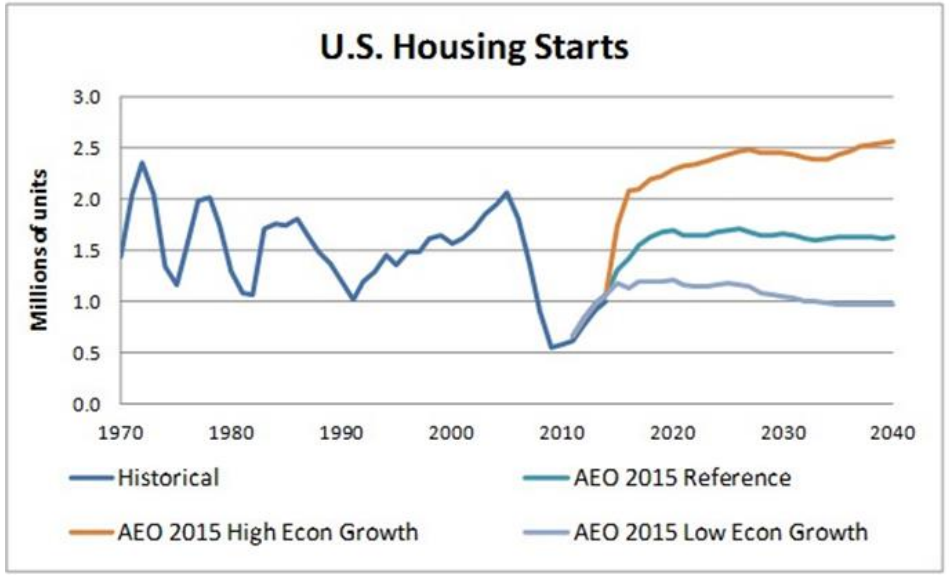


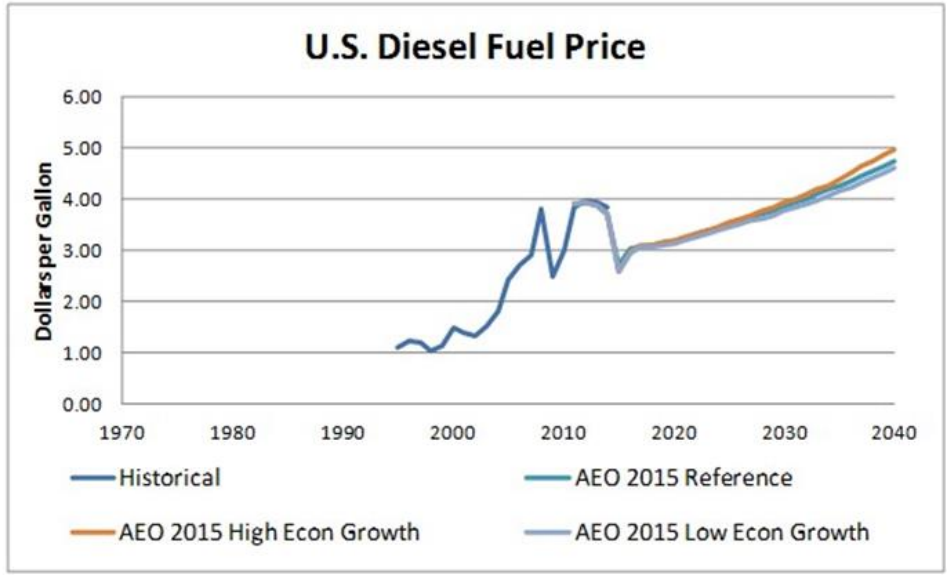
MOVING FOREST PRODUCTS THROUGH TIME

Demand Drivers
Multiple economic indicators
Multiple future economic scenarios



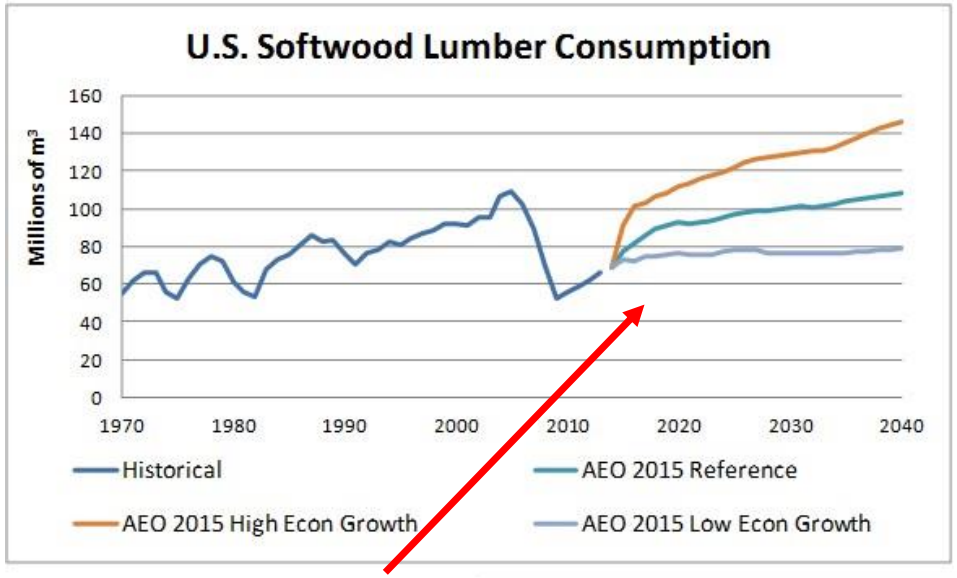


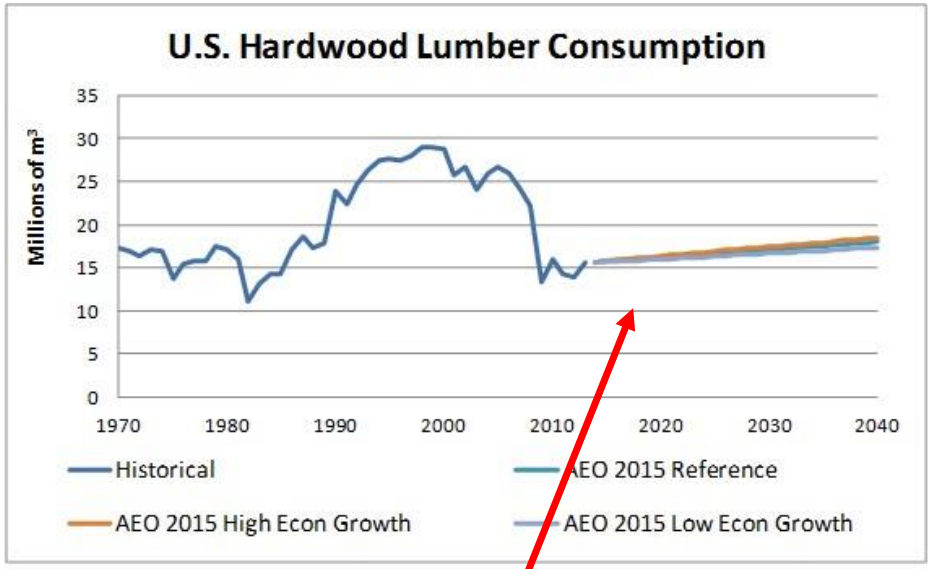




MOVING FOREST PRODUCTS THROUGH TIME

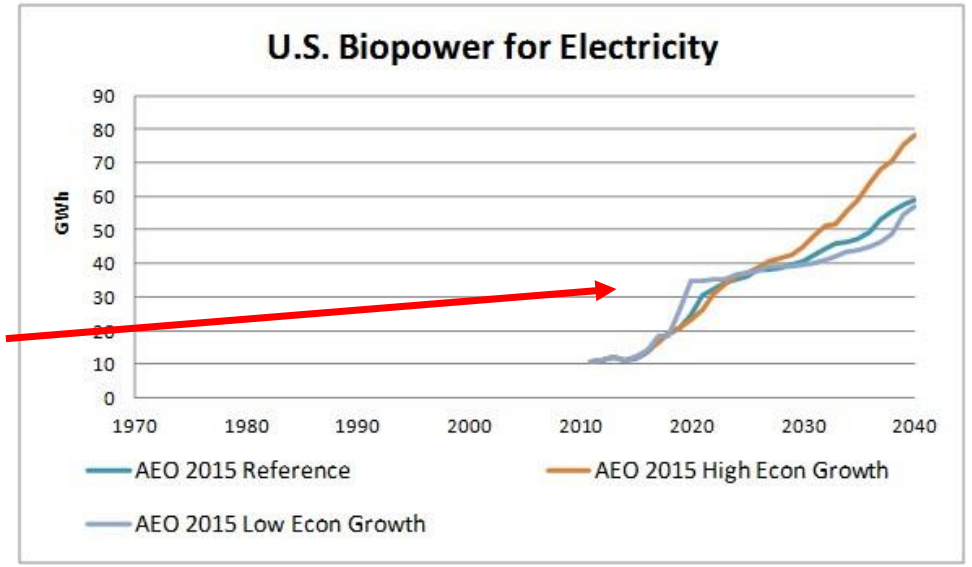
Demand Projections
Multiple economic indicators
Multiple future economic scenarios





Driven by GDP and housing starts

Driven by GDP



Taken directly from AEO 2015

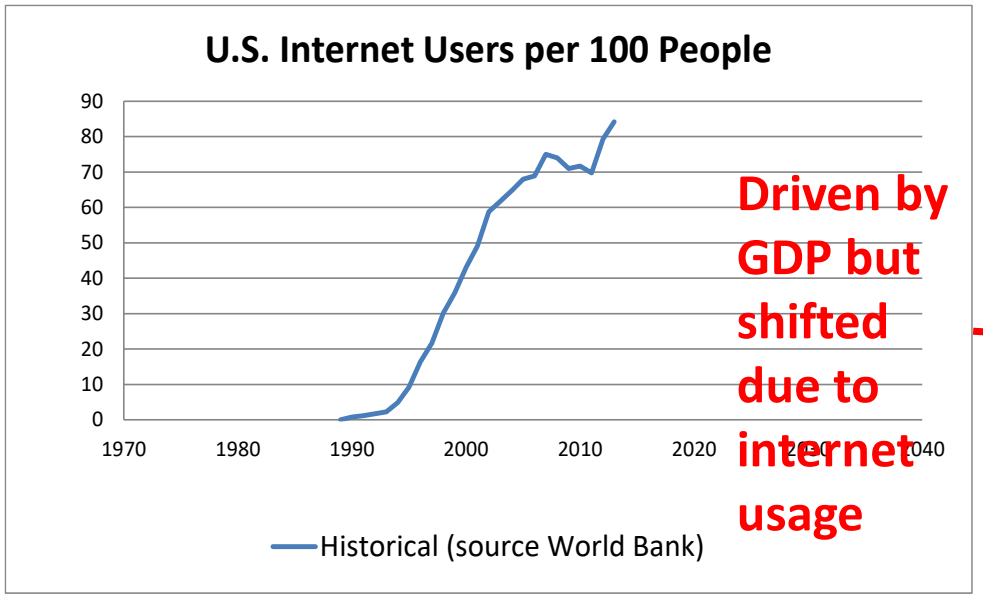
MOVING FOREST PRODUCTS THROUGH TIME

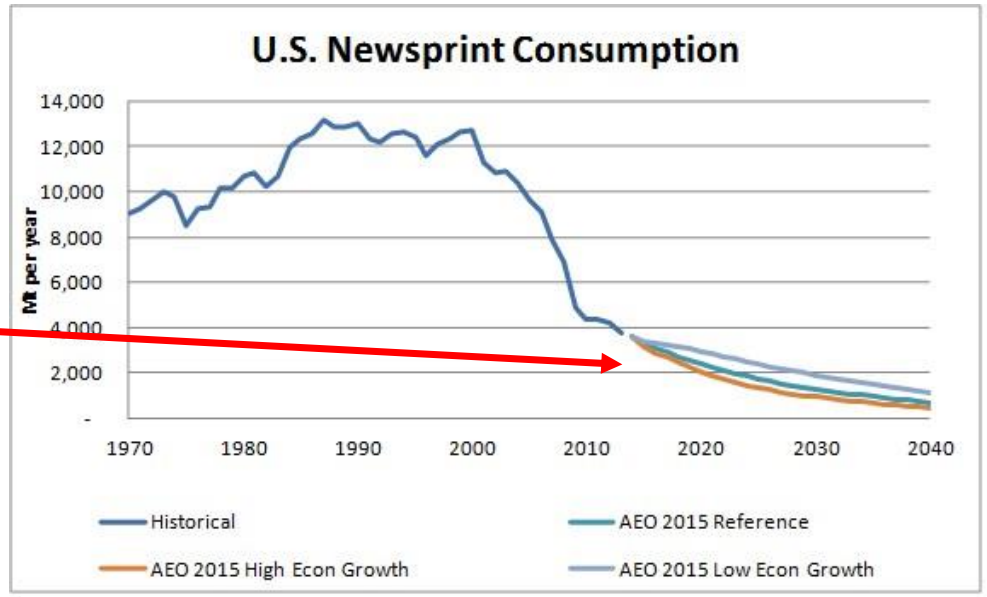
Pulp Market Demand Projections

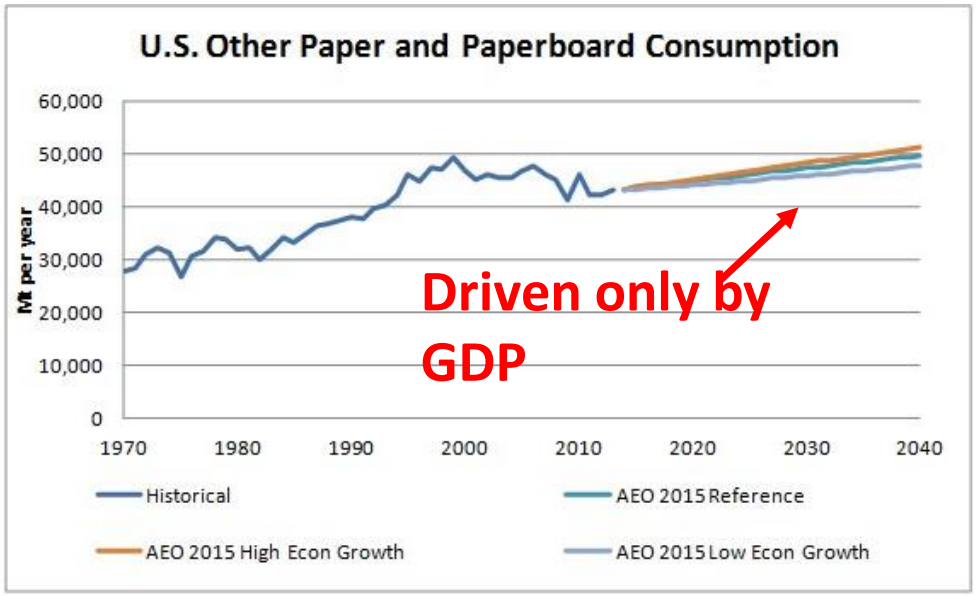
Multiple economic indicators

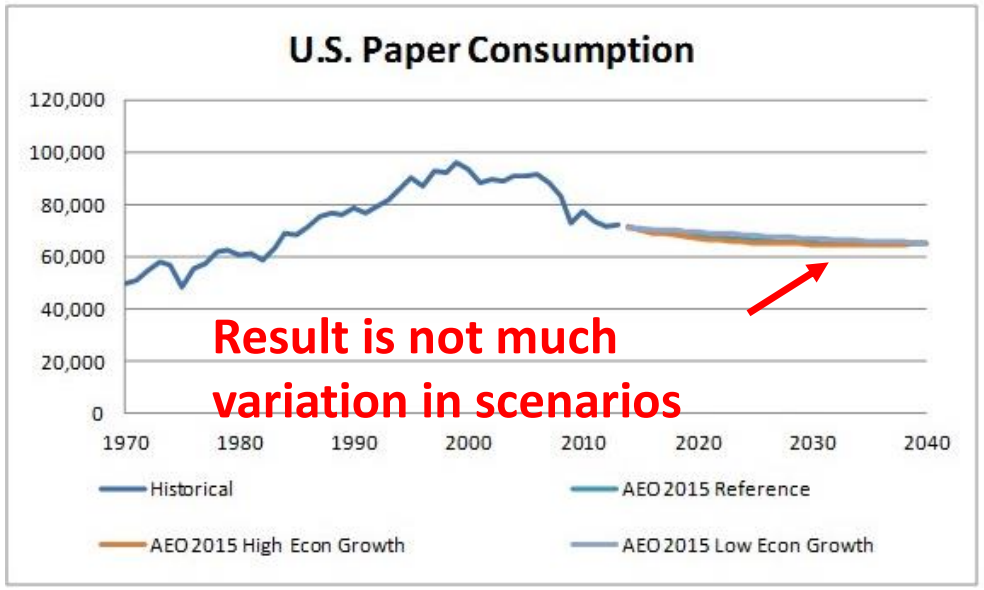
Multiple future economic scenarios

Latta, G., Plantinga, A., and M. Sloggy. 2016. The effects of Internet use on global demand for paper products. *Journal of Forestry* 114(4): 433-440.





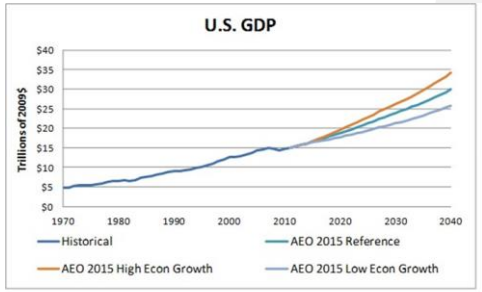


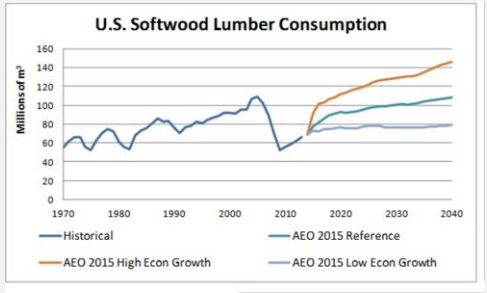


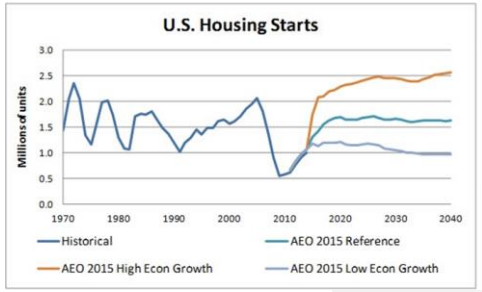
MODELING GNA FOREST MARKET EFFECTS

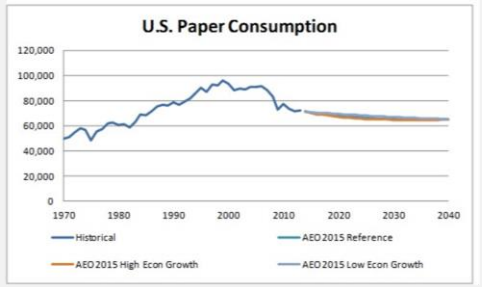
Methods

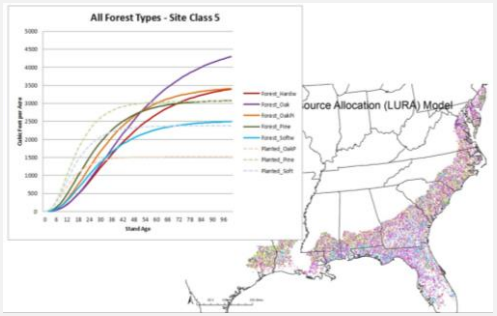
Use LURA and our 3 GNA harvest level scenarios to evaluate a regional and nation market reaction

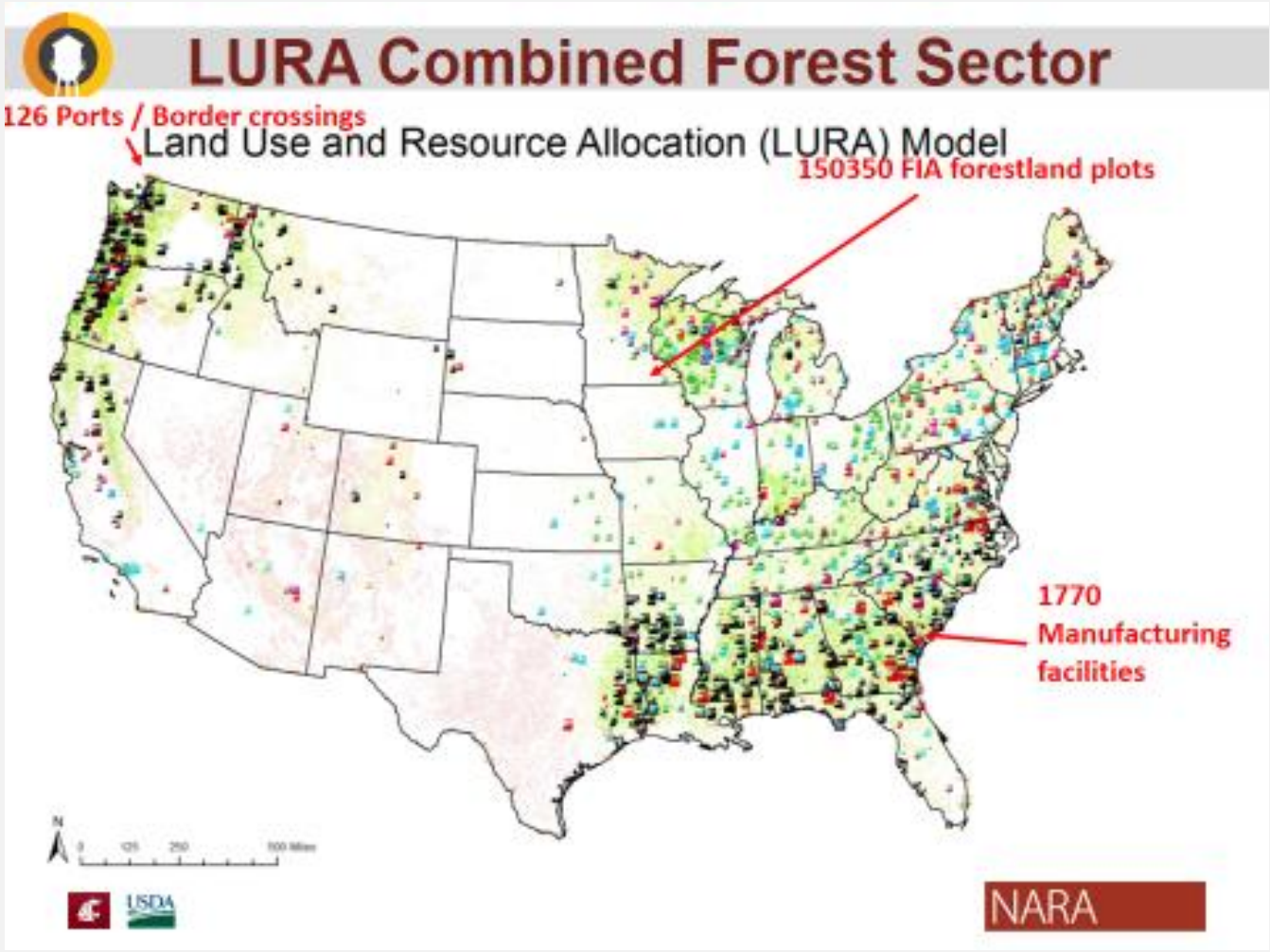












LURA GNA SCENARIO RESULTS

- **We ran the model through the end of 2022**
- **It was a nationwide run so we see inter and intra-state effects**
- **The results here are still preliminary (Draft) results and may be subject to change**
    - In fact we are here actively seeking feedback to improve the analysis
- **Results**
    - Harvest changes
    - Additional log hauling required
    - Economic contributions

GNA RESULTS – PROJECTED HARVEST LEVELS

2017 harvest is **246.2** mmcf

2022 harvest in GNA_Flat is **283.7** mmcf

That 37.5 mmcf increase is all on private land

2022 harvest in GNA_Amb is **331.0** mmcf

That 84.8 mmcf increase is 14.6 private and 70.2 public

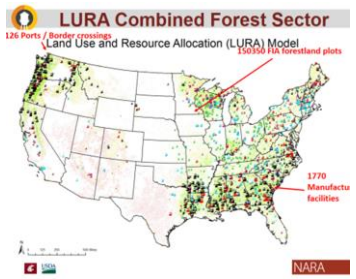
So:

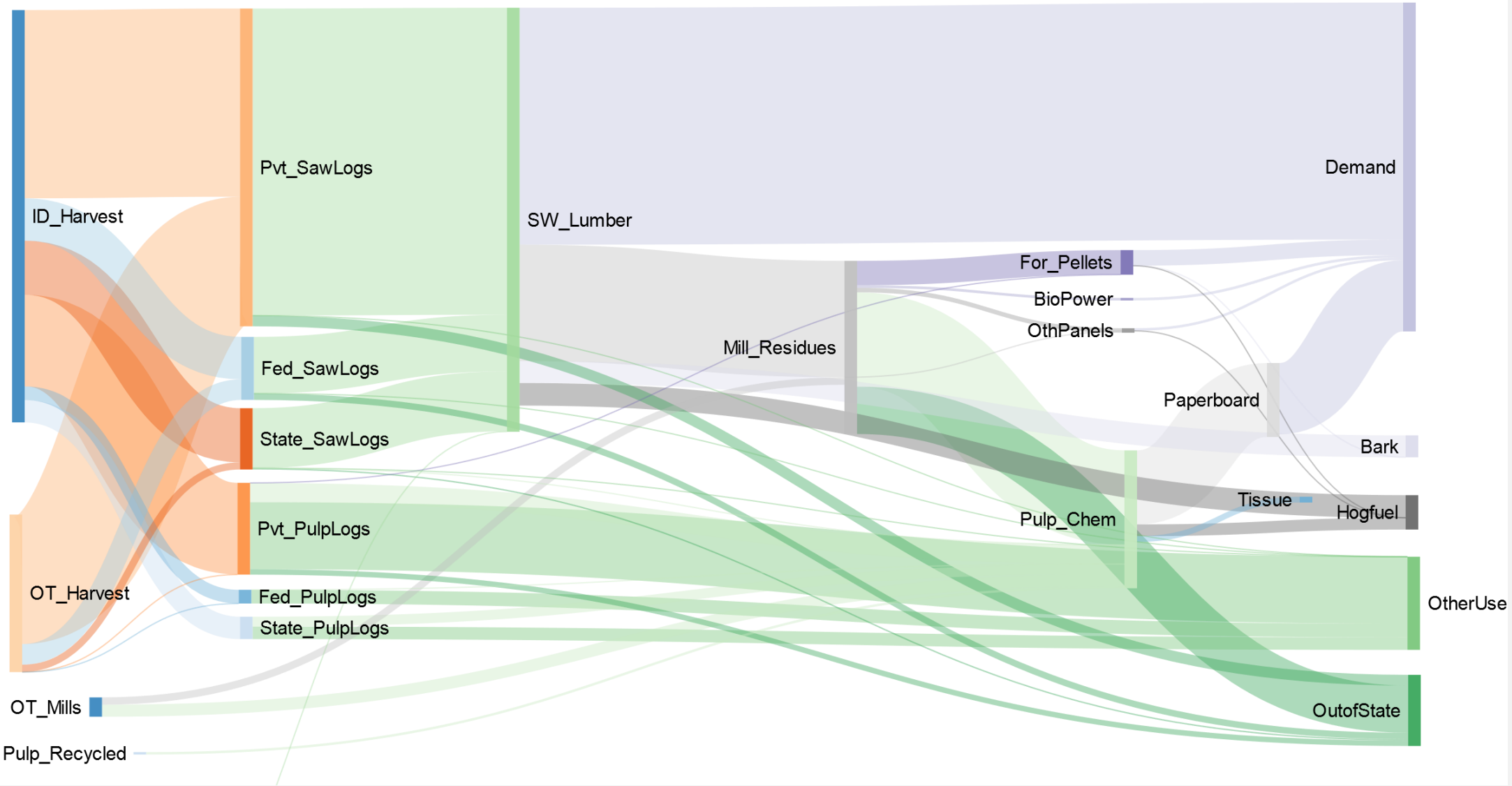
For every 1 ft^3 increase of GNA harvest in ID, ID private harvest falls 0.38 ft^3 and private harvest in other regions falls roughly 0.62 ft^3

			Scenario			
State	Owner	Year	GNA_Flat	GNA_BAU	GNA_Rsn	GNA_Amb
			thousand cubic feet			
Idaho	Private	2017	155,368	155,368	155,368	155,368
Idaho	Private	2018	173,558	170,073	168,087	168,087
Idaho	Private	2019	209,534	195,054	186,359	183,903
Idaho	Private	2020	196,100	187,705	185,766	184,676
Idaho	Private	2021	190,230	196,052	196,709	178,418
Idaho	Private	2022	192,863	189,395	176,438	170,308
Idaho	State	2017	52,599	52,599	52,599	52,599
Idaho	State	2018	52,599	52,599	52,599	52,599
Idaho	State	2019	52,599	52,599	52,599	53,651
Idaho	State	2020	52,599	52,599	52,599	56,807
Idaho	State	2021	52,599	52,599	52,599	59,963
Idaho	State	2022	52,599	52,599	52,599	63,119
Idaho	USFS	2017	38,265	38,265	38,265	38,265
Idaho	USFS	2018	38,265	44,524	46,714	46,714
Idaho	USFS	2019	38,265	41,696	54,107	56,057
Idaho	USFS	2020	38,265	44,354	61,453	67,304
Idaho	USFS	2021	38,265	53,242	65,493	80,722
Idaho	USFS	2022	38,265	60,110	69,882	97,583

Remember: this is a projection where harvest levels rise in general (so pvt doesn't really fall)

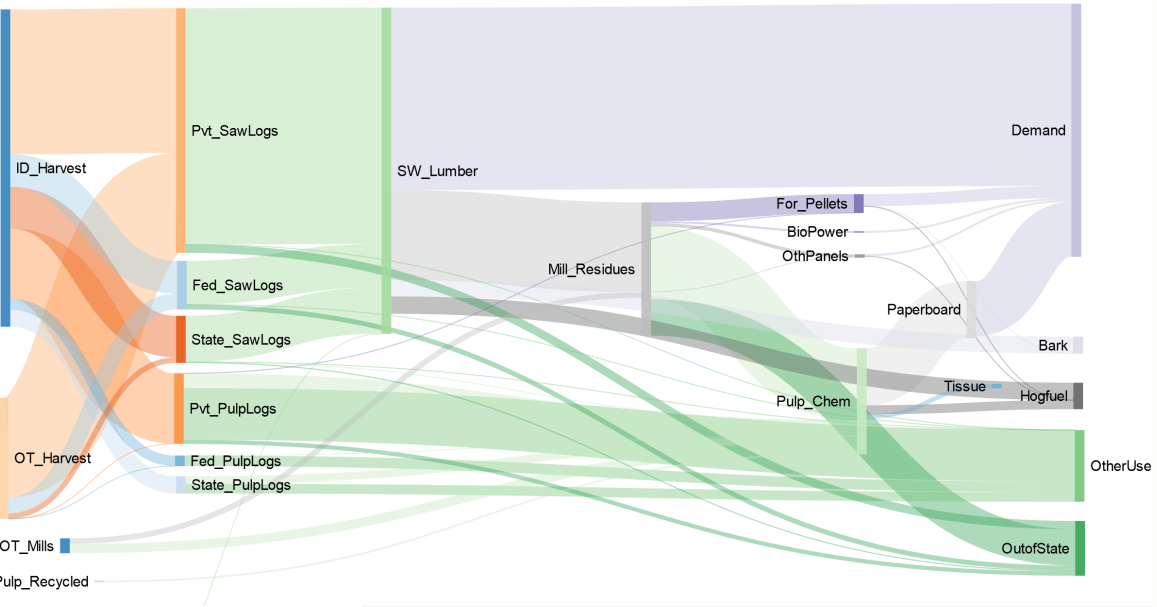
LURA'S VIEW OF IDAHO



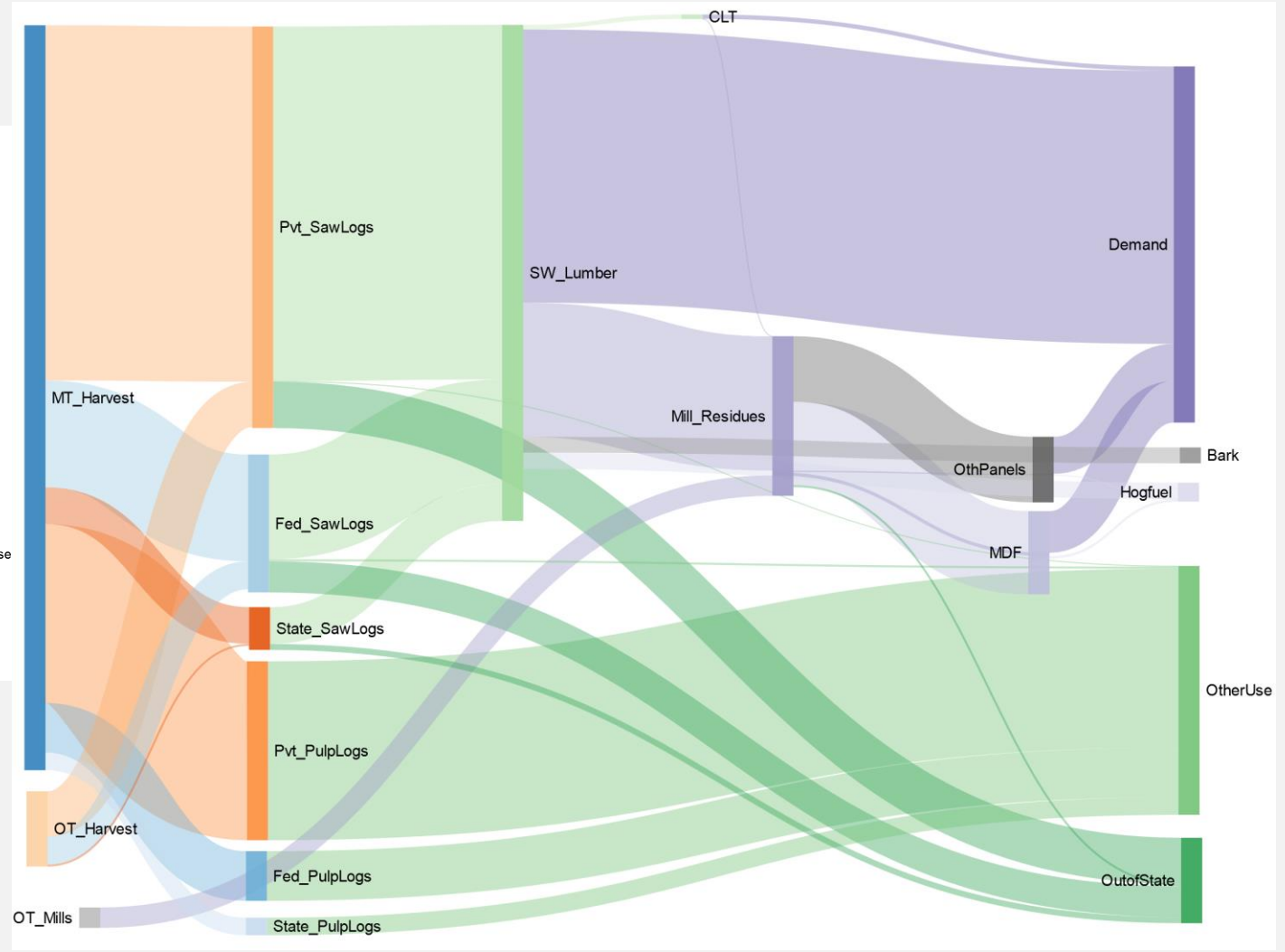


LURA'S VIEW OF MONTANA

Idaho



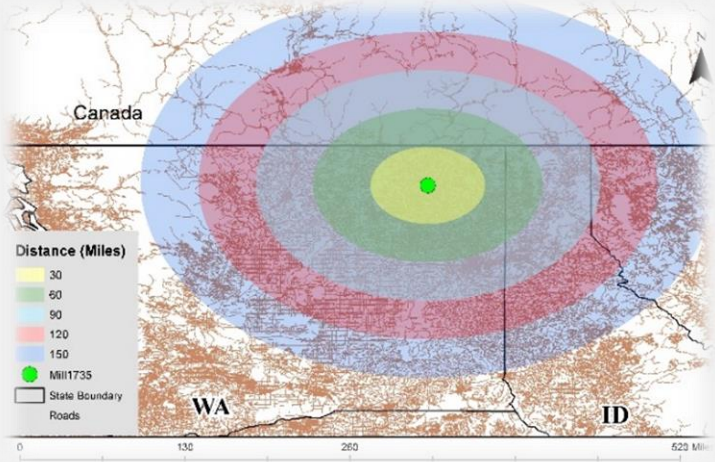
Montana

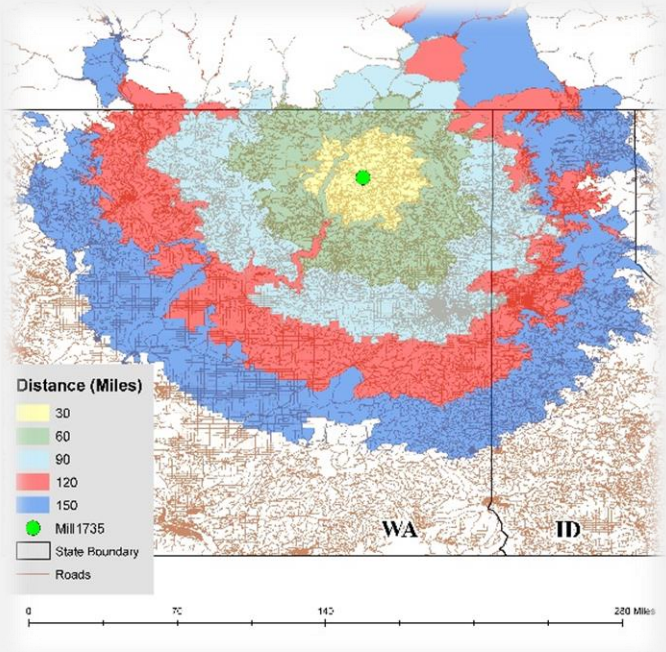


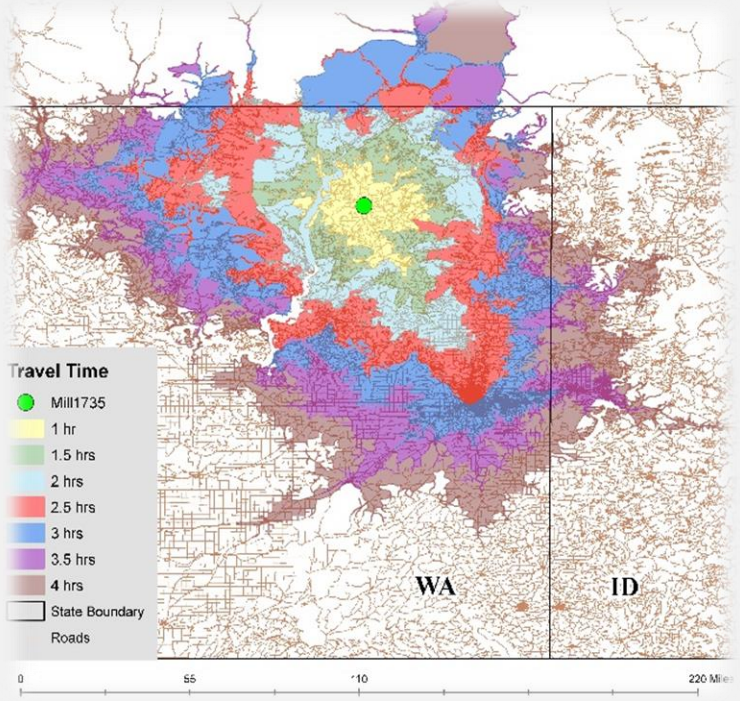
PAG – *MERCHANTABILITY ANALYSIS*

SERVICE AREA *- area around the mills that can be reached traveling on existing roads*

- Aerial distances overpredicts the service area around the mill
- Service area using distance is more accurate than aerial distances
- Service area using time is the most accurate since it takes speed limits and road conditions into account
- It should also account for out-of-state influence.







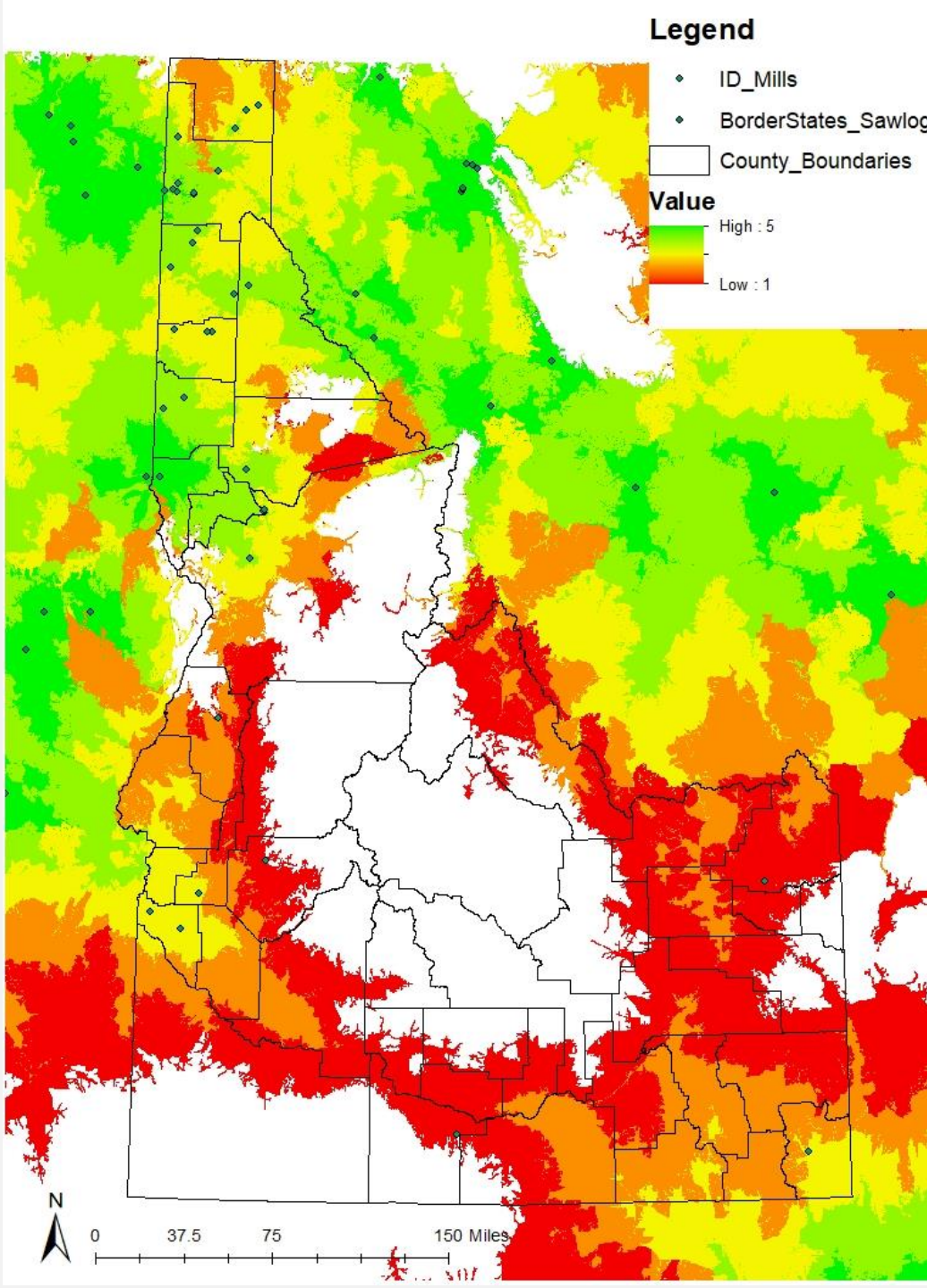
IDAHO – *SERVICE AREA EXAMPLE*

SAWLOGS

- Zones indicate what you could pay for stumpage
- 55 Mills bordering state using sawlogs
- 36 Mills using sawlogs in-state

This is where you could sell a log

Quintile	Saw log ($/Mbf)
5	$82.71
4	$62.03
3	$41.35
2	$20.68
1	$ -



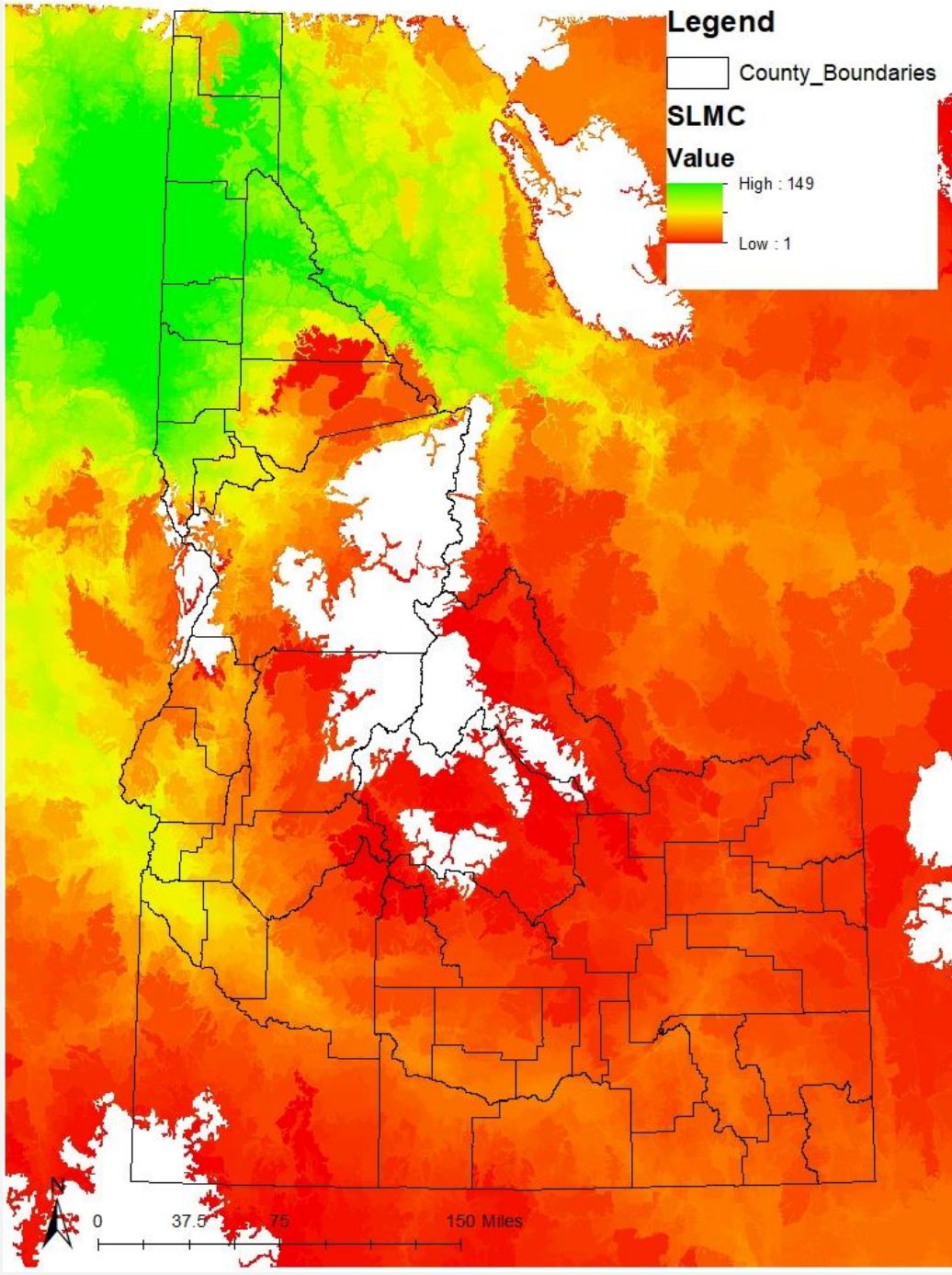
IDAHO – *SERVICE AREA EXAMPLE*

SAWLOGS

- 30 Softwood Lumber Mills
- Zones indicate what you could pay for stumpage

This is where you have more options when selling a log

Quintile	Saw log ($/Mbf)
5	$82.71
4	$62.03
3	$41.35
2	$20.68
1	$ -



GNA RESULTS – HAULING REQUIREMENTS

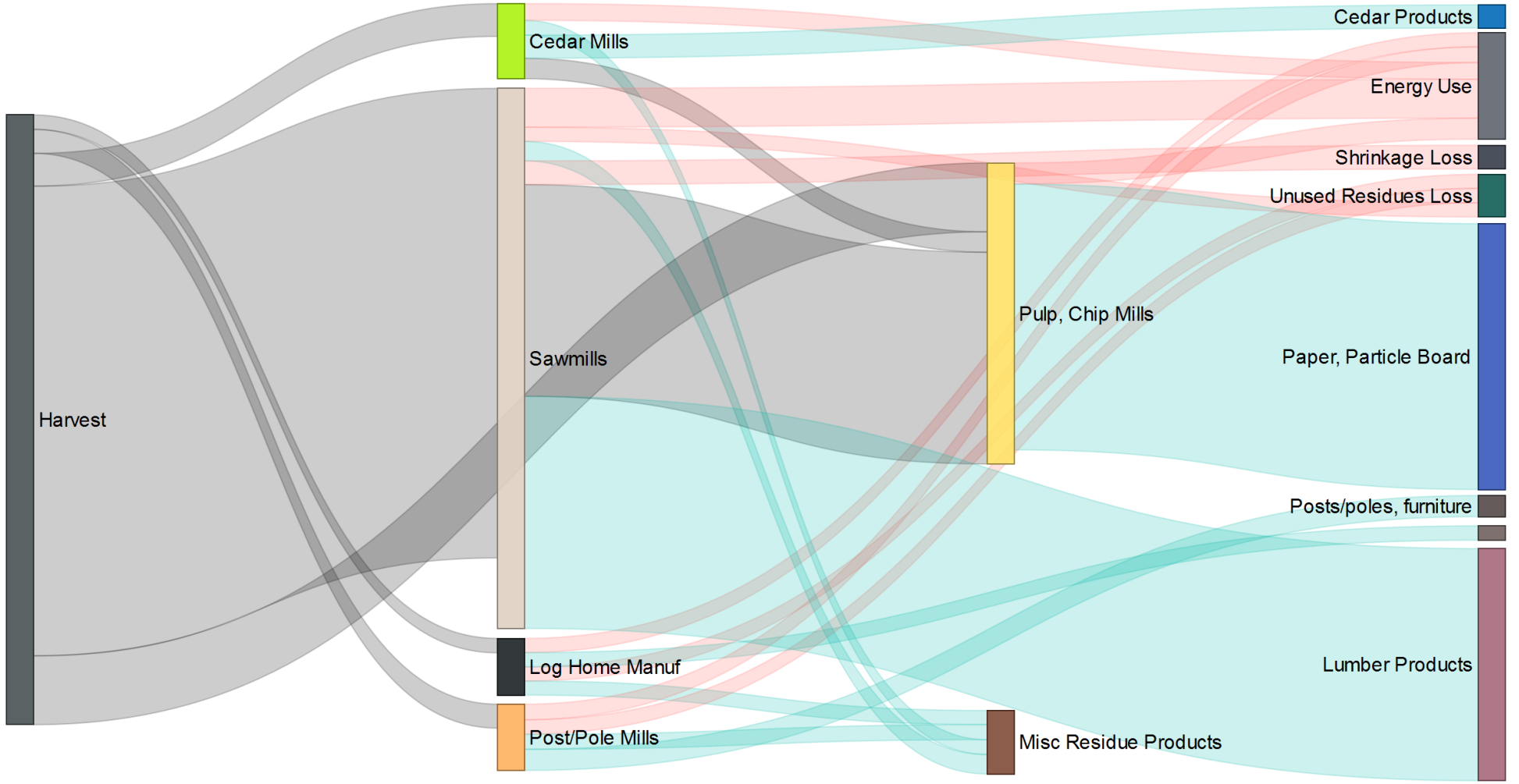
Note:
All of these scenarios (even GNA_Flat) require additional hauling

The important thing here is that the ambitious scenario would require 26,000 additional truckloads

State	Scenario	2017	2018	2019	2020	2021	2022
		thousand truckloads					
Idaho	GNA_Flat	163	163	173	161	159	162
Idaho	GNA_BAU	163	166	168	162	172	172
Idaho	GNA_Rsn	163	166	171	170	179	170
Idaho	GNA_Amb	163	166	171	175	183	189
				thousand miles driven			
				17,000	19,913	20,365	20,084
				17,461	18,107	22,493	21,599
				17,979	19,216	24,002	23,501
Idaho	GNA_Amb	14,027	16,870	18,312	20,252	24,205	28,175
				thousand hours trucking			
Idaho	GNA_Flat	720	1,092	1,035	1,252	1,115	1,045
Idaho	GNA_BAU	720	1,098	1,210	1,181	1,107	1,087
Idaho	GNA_Rsn	720	1,120	1,237	1,105	1,122	1,145
Idaho	GNA_Amb	720	1,120	1,206	1,079	1,180	1,249

This slide is a little of a call to arms for recruiting haulers (and Idaho isn't alone in this)

PAG - ECONOMIC CONTRIBUTIONS ANALYSIS



Forest Management & Harvest Operations	
Direct Jobs	5,698
Support Jobs	1,228
Value Added (GDP)	$401 million
Labor Income (Direct)	$189 million
Gross Sales (Direct)	$525 million

Wood Products, Paper & Furniture Mfg	
Direct Jobs	10,102
Support Jobs	12,071
Value Added (GDP)	$1.62 billion
Labor Income (Direct)	$496 million
Gross Sales (Direct)	$3.24 billion

Total Forestry Forest Products Industry	
Direct Jobs	15,799
Support Jobs	13,299
Value Added (GDP)	$2.02 billion
Labor Income (Direct)	$685 million
Gross Sales (Direct)	$3.77 billion

GNA ECONOMIC CONTRIBUTIONS COMPARED TO GNA FLAT

In this case we are looking at the change in economic accounts compared to the values of the GNA_Flat scenario

	GNA_BAU Response Compared to GNA_FLAT				GNA_RSN Response Compared to GNA_FLAT				GNA_AMB Response Compared to GNA_FLAT			
County	$ Output	$ Labor Inc	$ GDP	Jobs	$ Output	$ Labor Inc	$ GDP	Jobs	$ Output	$ Labor Inc	$ GDP	Jobs
Adams	69,746	106,969	107,405	2	-1,391,251	-695,455	-802,126	-16	-2,605,566	-1,294,089	-1,494,434	-31
Bannock	0	0	0	0	-483	-49	-101	0	2,775,282	283,070	579,012	63
Bear Lake	141	21	31	0	-376	-56	-82	0	-119,401	-17,937	-26,142	-1
Benewah	376,871	170,849	200,646	4	1,946,862	630,642	811,736	15	-2,995,904	-256,360	-612,033	-1
Blaine	-297,028	-143,511	-167,337	-3	216,088	104,405	121,738	3	216,088	104,405	121,738	3
Boise	186,347	97,938	111,273	2	-552,206	-290,785	-330,297	-6	-582,585	-307,229	-348,912	-6
Bonner	1,944,593	1,057,468	1,234,276	19	2,618,735	3,215,447	3,300,911	52	10,665,091	6,402,729	7,321,044	112
Boundary	-287,838	-152,336	-173,757	-4	-369,117	-193,780	-221,429	-5	-3,457,399	-966,728	-1,322,649	-20
Caribou	132	81	91	0	418	258	289	0	-3,264	-2,016	-2,253	0
Clearwater	1,053,759	554,111	645,515	11	232,089	124,417	144,370	2	710,240	374,360	435,901	7
Custer	13,771	4,355	5,798	0	159,346	50,394	67,090	3	329,511	104,209	138,735	5
Elmore	-34	-16	-19	0	-34	-16	-19	0	-34	-16	-19	0
Idaho	1,720,087	867,488	992,704	19	-1,236,435	-516,797	-613,790	-11	-4,642,435	-1,991,032	-2,351,899	-44
Kootenai	-7,074	4,234	2,575	0	-5,617,688	-1,409,774	-2,181,903	-25	-5,343,324	-1,230,711	-1,977,713	-23
Latah	-3,884,704	-1,541,509	-1,930,726	-38	-310,403	-154,507	-183,200	-4	2,716,539	1,291,485	1,547,263	32
Lemhi	168,731	78,416	93,189	2	-281,977	-131,046	-155,734	-3	-527,344	-245,077	-291,248	-6
Lewis	1,046,311	206,186	320,875	5	1,438,948	283,560	441,286	7	1,421,199	280,062	435,843	7
Madison	0	0	0	0	0	0	0	0	1,575,745	546,027	737,122	23
Nez Perce	-565,737	-89,174	-135,477	-1	19,916,039	3,779,470	5,432,924	65	65,380,692	11,546,546	17,162,741	196
Owyhee	0	0	0	0	794	187	268	0	-15,719	-3,700	-5,304	0
Shoshone	30,497	15,240	17,960	0	-135,730	-68,745	-80,802	-1	-287,844	-148,418	-173,852	-3
Valley	-74,593	-27,041	-35,021	-1	0	0	0	0	0	0	0	0
Washington	1,040,399	573,343	646,958	11	475,289	261,922	295,552	5	587,949	324,007	365,608	6
Total Idaho	**$ 2,534,375**	**$ 1,783,111**	**$ 1,936,959**	**28**	**$ 17,108,908**	**$ 4,989,690**	**$ 6,046,680**	**79**	**$ 65,797,516**	**$ 14,793,586**	**$ 20,238,546**	**318**

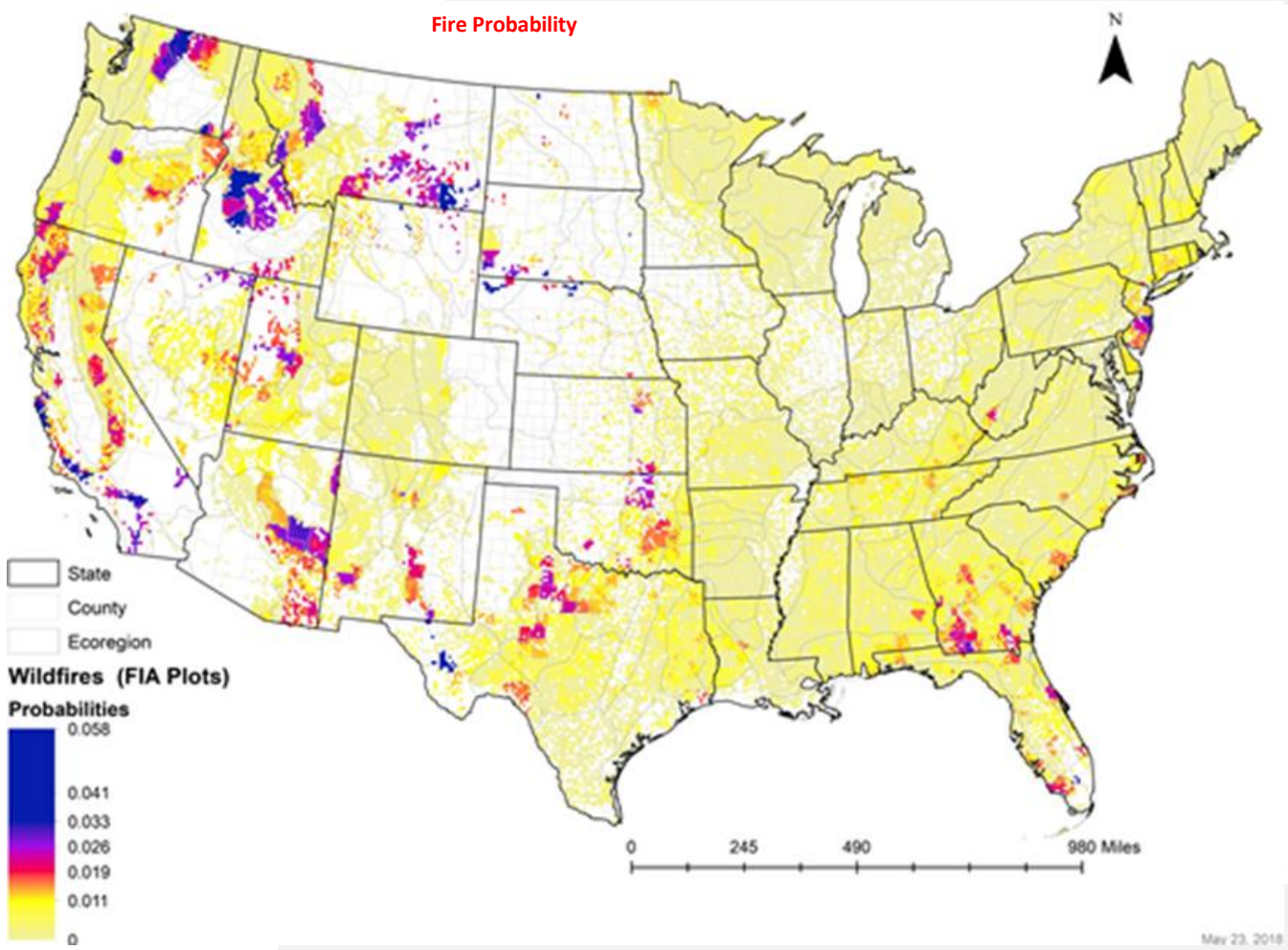
Note: Not all counties see positive values and where are all these people going to come from?

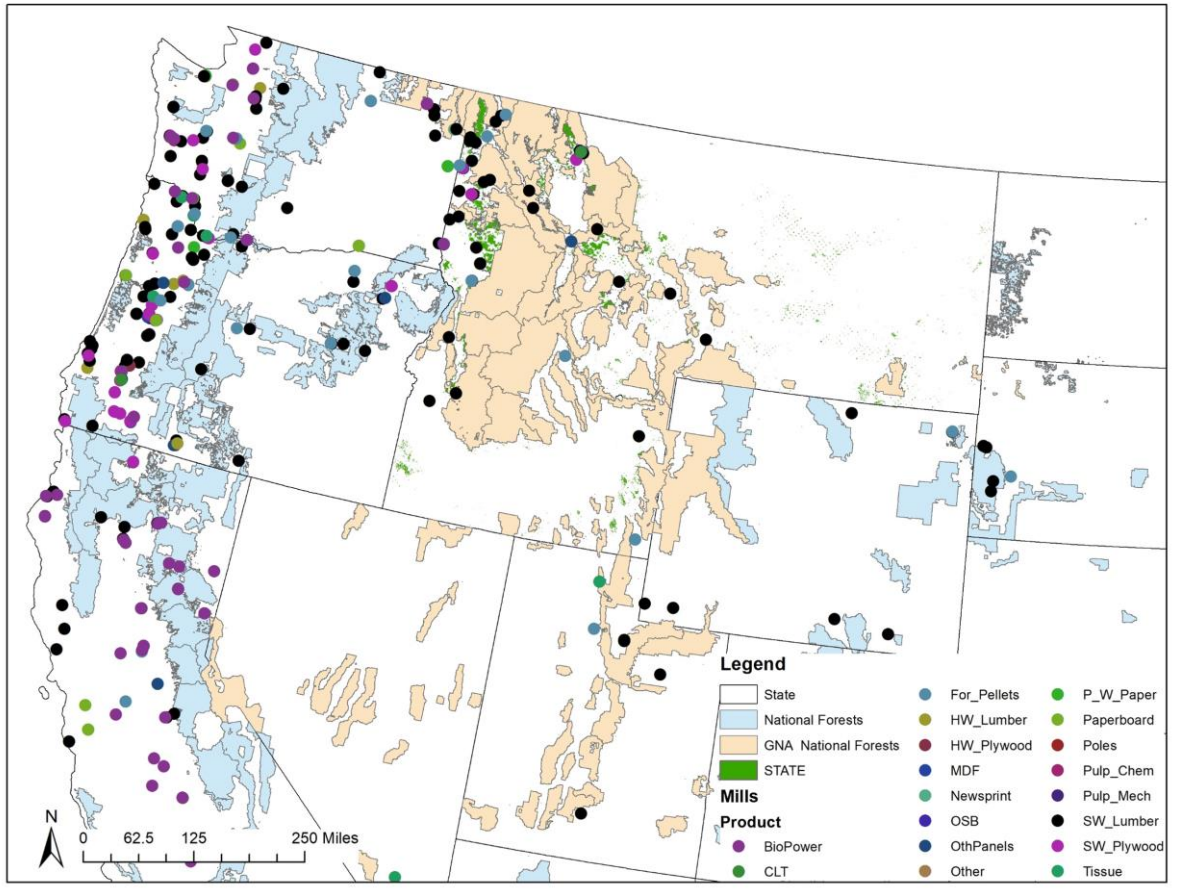
GNA– FUTURE DIRECTION – *OTHER RESULTS/ISSUES*

1) Higher harvest levels require additional logging and hauling
    - Can we just assume it will arrive?
2) There are a whole host of scenarios we could explore
        - Macroeconomic
        - Federal harvest focus – fuel reduction
3) There are a host of other ecosystem services to consider
    - Removing biomass will alter fire intensity
    - It also affects carbon accounts
4) Other….

GNA– FUTURE DIRECTION – *OTHER RESULTS/ISSUES*

- Federal harvest focus – fuel reduction





GNA– FUTURE DIRECTION – *CONCLUSION*

- The newest 2018 Farm Bill allows Counties and Tribes to participate in GNA.
  - Tribes have shown a particularly strong interest in GNA to help manage forests which may increase GNA use more than expected.
  - Counties and community forests may increase GNA as well.

University of Idaho
College of Natural Resources

Cassandra Goodmansen
NRS Masters Student
University of Idaho
cgoodmansen@uidaho.edu

@UIDAHOCNR

e-newsletter and **reports**
http://www.uidaho.edu/cnr/pag